THESIS FOR THE DEGREE OF DOCTOR OF PHILOSOPHY

A Process View of Business Model Innovation

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ABSTRACT

In an era of globalization, cross-fertilization of technologies and industries, and changing markets, firms are introducing new ways of creating or capturing value through Business Model Innovations (BMI). In recent years, BMI has become one of the priorities of practitioners, and has attracted the interest of scholars since product or process innovations on their own are perceived insufficient in the current internet era when other sources of competitive advantage are being needed. However, BMI can be difficult to manage for many firms, and despite increasing debate in the field, there is a lack of understanding about how BMI processes unfold. The purpose of this thesis is to explore BMI processes in multiple industrial and organizational contexts. To achieve this, the thesis is based on four papers written during the course of this PhD research which draw on empirical studies of diverse industries such as manufacturing, automotive, construction, publishing, and home furnishing. The firms studied in this thesis are new ventures developing new Business Models (BMs), Small and Medium-sized Enterprises (SMEs), and multinational corporations that have been working with BMI, either in parallel or as a substitute to their existing BMs.

The empirical observations support the distinction of two approaches to BMI: *purposeful* and *unintentional*. Purposeful BMI tends to be planned and starts with attentive cognitive search for a new BM, including recursive conceptualization, creation and offline evaluation of alternative BMs. The process is followed by experiential learning and adaptation of the new BM. Unintentional BMI refers to the emergence of a new BM as an outcome of the resolution of one or a number of major BM problems, to support other innovation activities. Thus, unintentional BMI processes take off from existing BMs and are characterized by a sequence of major problem formulation and solving which are orchestrated by shifts between experiential and cognitive search for solutions. My observations suggest that the antecedents to BMI may explain why in some cases, BMIs emerge unintentionally and in others firms embark purposefully on BMI. I discuss organizational implementation of BMIs in relation to how firms decide about the degree of separation and integration between parallel BMs. It is argued that the decision about how to structure parallel BMs cannot be made ex ante but emerges through the process of search for a new BM.

The contributions of this thesis are threefold; First it contributes to the emerging conceptualizations of BMI processes by explaining how BMI processes unfold in the two distinct spaces of '*new BM design'* and *'existing BM transformation'*. Second, the thesis contributes to the BMI literature by introducing problems as a mechanism and theoretical construct for understanding BMI processes in established firms. While the prior literature emphasizes patterns of shift between cognitive search and experiential learning when firms search for a new BM, they do not explain under what circumstances firms embark on either mode of search. Using the problem as the unit of analysis provides an important theoretical basis for conceptualizing the dynamics of the BM by understanding sequential shifts between the two modes of learning along the BMI process. Third, the thesis contributes to the growing debates on how to organize parallel BMs by showing that what is to be separated between the BMs depends on the specific context of the firm. Prior to answering the question of how separated parallel BMs should be, firms need to make sure that they have a viable BM and understand how it operates.

Keywords: business model, innovation, process, problem, cognitive search, experiential learning, ambidexterity, resource based view

LIST OF APPENDED PAPERS

Paper I
Title: In search of a route map: Exploring business model innovation processes in established firms.
Author: Sara Fallahi
Status: Manuscript under preparation for 2nd round of review with *International Journal of Innovation Management.*

Paper II
Title: Business model innovation processes: Looking forward and looking backward.
Authors: Joakim Björkdahl, Sara Fallahi, and Magnus Holmén
Authors' contributions: All authors contributed to the conceptualization of the paper, and writing the manuscript. Björkdahl took a more prominent role in data collection and in preparation of the revised manuscript.
Status: Submitted to an international journal.

Paper III
Title: Organizing for parallel business models in established firms.
Authors: Joakim Björkdahl, Sara Fallahi, and Magnus Holmén
Authors' contributions: All authors contributed to the conceptualization of the paper and writing the manuscript. Fallahi took a more proactive role in data collection and analysis.
Status: Working paper under preparation for submission to an international journal.

Paper IV
Title: Adapt and strive – How ventures under resource constraints create value through business model adaptations.
Authors: Martina Dopfer, Sara Fallahi, Markus Kirchberger, and Oliver Gassmann
Authors' contributions: The first three authors contributed equally to the conceptualization of the paper, empirical analysis, and draft writing. Empirical data were collected by Dopfer. Dopfer and Fallahi took more prominent roles in preparing the final version of the manuscript.
Status: Published in 2017 in *Creativity and Innovation Management,* Vol. 26, Issue 3, pp. 233-246.
DOI: https://doi.org/10.1111/caim.12218

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Chalmers TME, Göteborg
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S. Fallahi

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1 Introduction

What you are about to read in the following pages focuses on the phenomenon of Business Model Innovation (BMI)– a *"vitally important, and very difficult to achieve type of innovation"* for practitioners (Chesbrough, 2010, p. 362), and *"a slippery construct to study"* for researchers (Casadesus-Masanell and Zhu, 2013, p. 480).

It is generally agreed that a well-functioning Business Model (BM) is essential for the success of any commercial organization, whether a new venture or an established firm (Günzel and Holm, 2013; Magretta, 2002). Since the millennium there has been an increasing focus by both scholars [1]and practitioners on the BM as a unique unit of analysis that can replace or complement traditional units of analysis such as resources (Barney et al., 2001) which have been used for research on firms (Baden-Fuller and Mangematin, 2013; Berends et al., 2016).

Despite not being treated as a single homogeneous construct, to put it simple, the BM explains how a person or a firm conducts business at the system level (Demil et al., 2015; Zott et al., 2011). In this thesis, the BM is referred to as the logic for how the firm creates and captures value in a specific business (Björkdahl, 2007, 2009; Teece, 2010). The BM itself is not a new phenomenon; firms have always operated their businesses through BMs. However, traditionally it was the industry architecture that guided which BM the players in that industry should adopt (Massa and Tucci, 2014). Most industry firms followed similar logics for operating their businesses (e.g. manufacturing firms produced

[1] The BM has gained increasing popularity in various domains of research including strategic management (e.g. Zott and Amit, 2008; Teece, 2010; Casadesus-Masanell and Ricart, 2010; Matzler et al., 2013), innovation management (e.g. Bucherer et al., 2012; Chesbrough and Rosenbloom, 2002; Velamuri et al., 2013) and entrepreneurship (George and Bock, 2011; Osiyevskyy and Dewald, 2015; Trimi and Berbegal-Mirabent, 2012) to name a few.

products and sold them at a fixed price per unit to customers through distributors) (Björkdahl, 2011). The new phenomenon that has emerged to meet globalization, cross-fertilization of technologies and industries, and changing markets, is the innovation of BM which has become an important means for creating competitive advantage (Foss and Saebi, 2017).

There is a dual relation between the BM and innovation (Massa and Tucci, 2014). First, the BM is considered a vehicle for innovation since new products, services and technologies can be commercialized through different BMs, and accordingly, can drive different performance (Björkdahl, 2009; Chesbrough and Rosenbloom, 2002). Therefore, the BM has become popular as a source of competitive advantage for the firm, facilitating economic value creation through new products and technologies (Geisen et al., 2007; Zott and Amit, 2007). Second, the BM is seen as an independent source of innovation that complements traditional innovation types such as product, process, and organizational innovations (Casadesus-Masanell and Zhu; Massa and Tucci, 2014).

Innovation of the BM, or BMI can manifest itself in terms of both renewal of existing BMs (Demil and Lecoque, 2010; Johnson et al., 2008; Sosna et al., 2010), or as a means for diversifying and competing with multiple BMs (Kim and Min, 2015; Markides and Charitou; 2004; Winterhalter et al., 2016). In the scope of this thesis, BMI refers to the search for new integrated logic(s) for how the firm creates and captures value for its stakeholders (Björkdahl and Holmén, 2013; Casadesus-Masanell and Zhu, 2013). Massa and Tucci (2014) propose that BMI refers to two distinct phenomena: BM design (BMD) –which is the entrepreneurial activity of creating, implementing, and validating a new BM for a newly formed organization– and BM reconfiguration (BMR)– which is reconfiguration of organizational resources and acquisition of new ones, to change the current BM.

Competitive pressures have pushed BMI up the agendas of CEOs. In 2006, IBM Global Business Services conducted a global study of 765 CEOs who shared their views on innovation. The study revealed that CEOs focused around 30% of their innovation efforts on their BMs. The focus on BMI is more strongly correlated to operating margin growth compared to other types of innovation. With figures emphasizing the implications of BMIs on economic returns, more and more companies have been encouraged to generate competitive advantage by creating new BMs from scratch or making fundamental changes to their existing BMs (Giesen et al., 2010; Karimi and Walter, 2016; Matzler et al., 2013; McGrath, 2011). In 2016, IBM Global C-suite Study (2016) again surveyed more than 5,000 executives from 21 industries to find out that almost 80% of the executives were experimenting with alternative BMs or were considering doing so.

Despite the increased attention on BMI, replacing established BMs with an advantageous BM, or introducing a new BM in parallel with the established one has proven very

difficult and prone to failure for many incumbents (Chesbrough, 2010; Mezger, 2014; Teece, 2010). The complexity inherent in the interdependencies of BM components adds to the uncertainty involved in *ex ante* anticipation of how the BM as a system will behave when changing an individual BM component (Berends et al., 2016), and what the performance implications of the new BM will be (Lindgardt et al., 2009; Stieglitz and Foss, 2015). Such complexity and uncertainty often lead to inertia towards changing BMs that are still up and running, especially if the new BM conflicts with the existing assets and capabilities (Chesbrough and Rosenbloom, 2002; Hadjimanolis, 1999; Tripsas and Gavetti, 2000). In fact, established firms with previous success of their traditional BMs may not even recognize the opportunities for working with alternative BMs as information irrelevant to their 'dominant logic' is filtered out of their decision processes (Bettis and Prahalad, 1995; Chesbrough, 2010). Moreover, developing a new BM in parallel with the existing one involves complexities in implementation in terms of allocation of resources and configuration of required synergies between the two (Markides and Charitou, 2004; Mezger, 2014).

Acknowledging that firms find it very difficult to innovate and refine established BMs (Teece, 2010) raises the question of how the process of BMI can be organized and managed to overcome the underlying uncertainties and complexities. To address this question, it is necessary to understand how the BMI process unfolds. In a recent review of the BMI literature by Foss and Saebi (2017), the authors report that studies that relate to BMI as a dynamic process attend to highlight different stages in the BMI process (e.g. Cavalcante, 2014; Frankenberger et al., 2013; Pynnonen et al., 2012), identify different organizational capabilities and processes to support the change of BM (e.g. Achtenhagen et al., 2013; Doz and Kosonen, 2010; Dunford et al., 2010), emphasize the importance of learning and experimentation through the process of BMI (e.g. Andties and Debackere, 2013; Günzel and Holm, 2013; Sosna et al., 2010), and propose tools for practitioners to support them in managing the BMI process (e.g. Deshler and Smith, 2011; Evans and Johnson, 2013).

While contributions to the process-focused conceptualization of BMI have substantial merit, they also have some shortcomings. Publications concentrating on the process dimensions of BMI are relatively recent and quite scattered in terms of the theoretical lenses and empirical contexts used for their studies. Most existing conceptualizations of the BMI process draw on the innovation management or strategic management literature (e.g Cavalcante, 2014; Frankenberger et al., 2013; Sheehan and Stabell, 2007) rather than being based on and confirmed by empirical evidence. Those that are empirically grounded often focus on a particular industry, market context, or firm setting (Khanagha et al., 2014; Sosna et al., 2010; Velamuri et al., 2013), and very few investigate commonalities and differences in BMI processes across different contexts. Finally, the existing literature on BMI processes at times provide conflicting assumptions and findings. For example, while some assume that the BMI process is analytical, and suggest that the BM must first

be designed and then put into action (e.g. Chatterjee, 2013; Osterwalder and Pigneur, 2010), others characterize the process as discovery-driven, based on trial-and-error learning and experimentation (e.g. Chanal and Caron-Fasan, 2010; McGrath, 2010; Sosna, 2010).

This research takes an extended process view of BMI. An exploration of the BMI processes that integrate the antecedents, critical events and activities, and organizational implications of implementing such processes can provide a more comprehensive and empirically-grounded perspective for researchers and practitioners. The purpose of this thesis is to explore BMI processes in multiple industrial and organizational contexts. By process, I refer to the temporal sequence of events or activities that describe how things change over time (Langley, 1999; Poole et al., 2000). To fulfill this purpose, the thesis addresses following Research Questions (RQs):

RQ1: Why and when do companies innovate their BMs?

RQ2: How does the process of BMI unfold?

The thesis draws on four appended papers. The attached papers analyze BMI in both new and established firms by adopting a multiple case study approach. The majority of the companies included in the case studies are multinational corporations based in Sweden and active in a variety of industries such as manufacturing, construction, and home furnishing.

This thesis is structured in two parts: a general overview (cover paper) and four appended papers. The general overview is structured in the following chapters. Chapter 2, the frame of reference, discusses previous research on BM, BMI, and BMI processes in particular. Chapter 3, outlines the methodological choices in the thesis, and the research design and methods for the four primary studies included. Chapter 4 provides a synopsis of the main findings of the four papers, followed by a discussion in Chapter 5 of the core insights of the thesis. Chapter 6 provides a number of implications for research and practice and suggests potential paths for future research, and Chapter 7 summarizes the main conclusions.

2 Frame of reference

This frame of reference draws on a literature study on the topics of BM and BMI. The aim with the literature study was to identify the early publications, as well as the most influential[2], and the most recent contributions made that this thesis should take into account.

2.1 Introduction to the literature review

The literature study used a topic search[3] in Scopus- the largest abstracts and citations database of peer-reviewed journals, books and conference proceedings. First, the term "business model" was searched in the search field "article title, abstract, keywords" within subject areas "business, management, and accounting", "social sciences", "economics, econometrics, and finance", and "decision sciences", and limited to articles, book chapters, books, articles in press, reviews, editorials, and business articles in English[4]. The result of the search listed 6,191 hits including 4,611 articles, 688 book chapters, 505 reviews, 211 books, 142 articles in Press, 33 editorials, and 1 business article. Figure 1 shows how the number of publications on BM has increased since the millennium related perhaps, to the increasing popularity of the BM construct for explaining the internet-based business ventures (Amit and Zott, 2001). While many new ventures entered the market with new BMs accompanying their e-businesses, innovating and adapting established BMs became a major task for many executives in established

[2] Measured by number of citations.

[3] Throughout my studies I have continuously approached the existing literature on the topics of BM and BMI at different stages of my research projects including prior to designing different projects (to synthesize and reflect on what has already been said and problematize accordingly) and later during data analysis to draw on existing material to make sense of my observations. This particular systematic literature review in Scopus was performed in relation to the cover paper, based on a topic search conducted on December 14, 2016.

[4] The search string used was TITLE-ABS-KEY ("business model") AND PUBYEAR < 2017 AND (LIMIT-TO (DOCTYPE , "ar") OR LIMIT-TO (DOCTYPE , "re") OR LIMIT-TO (DOCTYPE , "ch") OR LIMIT-TO (DOCTYPE , "bk") OR LIMIT-TO (DOCTYPE , "ip") OR LIMIT-TO (DOCTYPE , "ed") OR LIMIT-TO (DOCTYPE , "bz")) AND (LIMIT-TO (SUBJAREA , "BUSI") OR LIMIT-TO (SUBJAREA , "SOCI") OR LIMIT-TO (SUBJAREA , "ECON") OR LIMIT-TO (SUBJAREA , "DECI")) AND (LIMIT-TO (LANGUAGE , "English")).

firms alongside their efforts to cope successfully with technological innovations, and competition changes (Wirtz et al., 2010).

Second, a similar search was made on "business model innovation" and related terminologies commonly used in the literature discussing BMI including "business model reinvention" (Johnson et al., 2008; Govindarajan and Trimble, 2011), "business model dynamics" (Cavalcante et al., 2011; de Reuver et al., 2009), "business model renewal" (Doz and Kosonen, 2010; Sandström and Osborne, 2011) "business model evolution" (Demil and Lecocq, 2010; Lee et al., 2013), "business model transformation" (Aspara et al., 2013; Berzosa et al., 2012), and "business model reconfiguration" (Calia et al., 2007) [5]. This search identified a total of 338 documents, including 268 articles, 30 book chapters, 22 reviews, 12 articles in press, 3 books, and 3 editorials. Figure 1 shows that compared to the BM topic the number of publications on BMI and similar terminologies is relatively low (6,191 vs. 338) and while research on BM can be traced back to 1972[6], it was not until 2000 that the first publication on BMI appeared. Moreover, while the number of publications on BMI as one extension of the BM field has been raising rapidly since 2010, the growth of the BMI sub-field is considerably smaller than the growth of the BM field. All of this indicates that BMI is a recent and emerging field which in turn, might explain certain concerns highlighted by scholars about this field such as lack of construct clarity, lack of cumulativeness of research efforts, and the small empirical focus in the research (Foss and Saebi, 2016; Schneider and Spieth, 2013). The increased research on BMI may be due to the several special issues in strategy and innovation management journals including *Long Range Planning* (2010, 2013), *International Journal of Innovation Management* (2013), *R&D Management* (2014) and *Strategic Entrepreneurship Journal* (2015) dedicated to BM and BMI.

[5] The search string used was (TITLE-ABS-KEY ("business model innovation") OR TITLE-ABS-KEY ("business model reinvention") OR TITLE-ABS-KEY ("business model reconfiguration") OR TITLE-ABS-KEY ("business model evolution") OR TITLE-ABS-KEY ("business model transformation") OR TITLE-ABS-KEY ("business model dynamics") OR TITLE-ABS-KEY ("business model renewal")) AND PUBYEAR < 2017 AND (LIMIT-TO (DOCTYPE , "ar") OR LIMIT-TO (DOCTYPE , "ch") OR LIMIT-TO (DOCTYPE , "re") OR LIMIT-TO (DOCTYPE , "ip") OR LIMIT-TO (DOCTYPE , "bk") OR LIMIT-TO (DOCTYPE , "ed")) AND (LIMIT-TO (SUBJAREA , "BUSI") OR LIMIT-TO (SUBJAREA , "ECON") OR LIMIT-TO (SUBJAREA , "DECI") OR LIMIT-TO (SUBJAREA , "SOCI")) AND (LIMIT-TO (LANGUAGE , "English")).

[6] Based on my search string in Scopus the first publication using the term "business model" was in 1972. However, the term Business Model appeared in the literature in 1957.

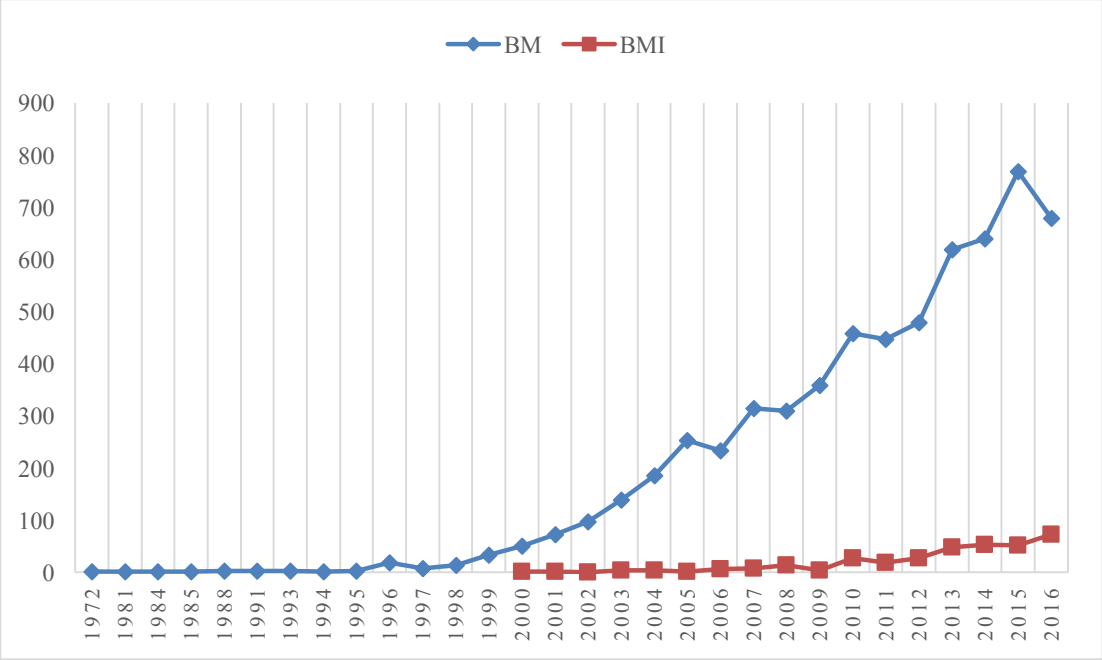

Figure 1: Published research on BM, and BMI.

Source: Author, based on Scopus search results for the terms "business model" (6191 hits), and ("business model innovation" OR "business model renewal" OR "business model reconfiguration" OR "business model transformation" OR "business model dynamics" OR "business model reinvention" OR "business model evolution") (338 hits) in the search field "article title, abstract, keywords" within subject areas "business, management, and accounting", "social sciences", "economics, econometrics, and finance", and "decision sciences", and limited to articles, book chapters, books, articles in press, reviews, editorials, and business articles in English, published until December 14, 2016.

Table 1 lists some of the most cited articles on BMs selected based on the literature review. The list includes articles that have contributed to the conceptualization of the BM construct (Morris et al. ,2005; Teece, 2010; Zott and Amit, 2010), that have discussed BMs as a vehicle for creating and capturing value from technological innovations (Amit and Zott; 2001; Chesbrough and Rosenbloom, 2002), in relation and as opposed to strategy (Magretta, 2002; Teece, 2010), and as a new source of innovation (Chesbrough, 2010; Johnson et al., 2008).

Table 2 lists the most productive scholars[7] and journals publishing on BMs. The majority of the journals that have been the most active in publishing on BM and BMI topics are in general management, innovation, and strategy disciplines, and listed in the academic journal guide approved by the Association of Business Schools (ABS Academic Journal Guide, 2015). Some journals from other disciplines also have shown an interest in the BMI construct. For example, *Journal of Cleaner Production* has published many papers that discuss the BM in relation to sustainability, and *Telematics and Informatics* includes

[7] Measured by number of publications with the words "business model" in the article title, abstract or keywords.

many articles discussing suitable BMs for digital industries, such as mobile and wireless communications, online gaming industry, etc.

Among scholars, some are not conducting explicit research contributing to our understanding of the BM and BMI constructs. Instead, they are borrowing these constructs to contribute to other fields of research such as finance, healthcare, sustainability, and Information and Communication Technology (ICT). Such attempts confirm how interest in BM and BMI constructs has been growing and spreading across different disciplines but leading to divergences in the use of the constructs, conceptualizations, and operationalizations which continue to plague the field (Foss and Saebi, 2017; George and Bock, 2011; Zott et al., 2011).

Table 1: The most cited articles on BM.

Title	**Author(s)/ year**	**Journal**	**#Citations**
Value creation in e-business	Amit and Zott (2001)	Strategic Management Journal	1523
The role of the business model in capturing value from innovation: Evidence from Xerox Corporation's technology spin-off companies	Chesbrough and Rosenbloom (2002)	Industrial and Corporate Change	1044
Business models, business strategy and innovation	Teece (2010)	Long Range Planning	975
Why business models matter	Magretta (2002)	Harvard Business Review	676
The business model: Recent developments and future research	Zott et al. (2011)	Journal of Management	591
The entrepreneur's business model: Toward a unified perspective	Morris et al. (2005)	Journal of Business Research	557
Business model innovation: Opportunities and barriers	Chesbrough (2010)	Long Range Planning	508
Reinventing your business model	Johnson et al. (2008)	Harvard Business Review	473
Business model design: An activity system perspective	Zott and Amit (2010)	Long Range Planning	405
The power of business models	Shafer et al. (2005)	Business Horizons	383
The fit between product market strategy and business model: Implications for firm performance	Zott and Amit (2008)	Strategic Management Journal	342
From strategy to business models and onto tactics	Casadesus-Masanell and Ricart (2010)	Long Range Planning	327

Table 2: The most productive scholars and journals.

Scholar	Subject area	#	Journal	Subject area[8]	#
Bouwman, H.	Information and Communication Technology	24	*Journal of Cleaner Production*	Not listed	67
Ballon, P.	Communication science, ICT-based innovations	16	*Journal of Air Transport Management*	Economics, econometrics and statistics	49
Chesbrough, H.	Innovation Technology-based spinoffs and corporate venture capital	13	*Harvard Business Review*	General Management	48
Casadesus-Masanell, R.	Competing business models Strategy	12	*Long Range Planning*	Strategy	44
Ghezzi, A.	ICT Driven Business Innovation	12	*Research Technology Management*	Innovation	43
Zott, C.	Entrepreneurship Design and implementation of new business models	12	*Industrial Marketing Management*	Marketing	42
De Reuver, M.	ICT platforms	11	*Strategic Direction*	Not listed	42
Gassmann, O.	Technology Management Innovation	11	*Technological Forecasting and Social Change*	Social Sciences	40
Amit, R.	Entrepreneurship Strategic Management	10	*Journal of International Academy for Case Studies*	Not listed	36
Comfort, D.	Sustainability	10	*Strategy and Leadership*	Not listed	36
Currie, W.L.	E-health Information systems management	10	*Journal of Business Research*	General management	35
Froud, J.	Financial Innovation	10	*International Journal of Information Management*	Information Management	33
Haaker, T.	ICT driven innovation	10	*Journal of Business Strategy*	Not listed	33
Haslam, C.	Accounting/Finance	10	*Management Decision*	General Management	32
Hillier, D.	Corporate Finance and Corporate Governance	10	*Telematics and Informatics*	Not listed	31
Jones, P.	Sustainability	10	*California Management Review*	General Management	29
Williams, K.	Financial innovation	10	*International Journal of Entrepreneurship and Innovation Management*	Innovation	27
Johal, S.	Accounting & Strategy Finance	9	*R&D Management*	Innovation	27
Kodama, M.	Strategy	9	*Technovation*	Innovation	27
Koh, S.C.L.	Sustainability	9	*Business Horizons*	General Management	26

[8] Based on ABS Academic Journal Guide (2015).

2.2 Business model

"The confusion surrounding business model innovation begins, appropriately enough, with confusion about the term 'business model'." – Clayton Christensen (2016)

Early scholarly use of the BM concept can be traced back to 1957 in the context of operations research, where the term originally was associated to system modeling of a set of computerized business game models to be used in information systems (e.g. Bellman et al., 1957; Stanford, 1972). While the term has been present in scientific discussions for over fifty years, initially it has been used in very unspecific manner from a discussion of how much freedom businesses should have (McGuire, 1965) to what educators should be doing when adapting to new technical developments (Jones, 1960).

In the late 1990s, BM began to be used in the context of information technology, with the development of ICTs leading to the rise of web-based markets and e-businesses, enabling a new era for BM research. For example, the concept was picked up by entrepreneurship and strategy scholars (DaSilva and Trkman, 2014) as a novel unit of analysis for explaining how new e-business ventures functioned and competed with traditional players in mature markets in their advantageous BMs (e.g. Amit and Zott, 2001; Andrén et al., 2003; Casadesus-Masanell and Ricart, 2010; Mahadevan, 2000; Porter, 2001; Timmers, 1998).

With ICT disrupting the way companies ran businesses in diverse industries, BM research spread to analyses of industry transformations, for instance in the airline sector (e.g. Lawton and Solomko, 2005) and the music industry (e.g. Manafy, 2006). The growth of the BM literature since 2004 led to further applications of the terminology as a buzzword in many papers outside the field of business and management such as to discuss the BM of terrorist organizations (Vardi, 2010) and the modernization of the labor party in the UK (Faucher-King, 2008).

As an emerging field the BM literature has been characterized by conceptual proliferation (Foss and Saebi, 2017; Morris et al., 2005; Shafer et al., 2005). Lack of consensus about what a BM consists of may in part be attributable to the application of the concept in a wide range of disciplines that showed an interest in the concept, all of which have arrived at different and mostly industry-specific understandings of the term (Günzel and Holm, 2013). The BM literature points to the usefulness of the BM construct in research on strategy, technology management, and entrepreneurship among others. In strategy, the BM is seen as an antecedent to heterogeneous firm performance. Certain types of BM have been found to out-perform certain others which has led to discussion of the BM as a source of competitive advantage. In technology management, the BM is discussed as complementary to technological innovations, in that the BM can explain why some firms capture more value from certain technologies compared to others. The BM has been seen also as a potential source of innovation, leading to the idea that firms can purposefully

innovate their BMs. In entrepreneurship, the BM is used as a basis for enterprise classification. Thus, the BM construct has been used to explain the drivers of value in many e-business ventures that have emerged since the late 1990s.

This heterogeneous background has resulted in the BM being referred to as a model (Baden-Fuller and Morgan, 2010; Osterwalder et al. , 2005), a framework (Afuah, 2004), a method (Afuah and Tucci, 2001), a description (Weill and Vitale, 2001), an architecture (Timmers, 1998; Teece, 2010), a pattern (Brousseau and Penard, 2007), a logic (Casadesus-Masanell and Ricart, 2010), a set of decisions (Girotra and Netessine, 2014), or a structural template (Amit and Zott, 2001). Variety of definitions in the literature indicate the ambiguity surrounding what a BM is and what it is not (Saebi and Foss, 2015). Most BM definitions come from an operational, economic, or strategic perspective which includes the firm's offerings, the activities undertaken to produce and deliver them, and the way the firm earns profit from them (Chesbrough, 2007; Johnson et al., 2008; Magretta, 2002; Teece, 2010).

Several perspectives have been applied by researchers to the term BM, one of the most common being to structure the BM on the basis of its essential elements or components (Ritter and Lettl, forthcoming). A widely-used example of this type of conceptualization is the BM canvas (Osterwalder and Pigneur, 2010) consisting of nine interrelated building blocks; *value proposition*, *key resources*, *key activities*, *key partnerships*, *customer segments*, *customer relationships*, *distribution channels, cost structure,* and *revenue streams.* Table 3 presents the components of the BM derived from different academic articles. Indeed, the BM consists not only of its BM components per se but also the linkages and interactions among those components(Afuah and Tucci, 2001; Foss and Saebi, 2015). Disagreements about the content and the number of components in the firm's BM, signal that organizations are complex systems that are difficult to understand from a single perspective (Cavalcante, 2014; Denyer et al., 2008).

Over time, a few central components have emerged in the literature which can be seen as common to any BM description. The firm's value proposition, the value chain architecture, and the profit model that the firm deploys are fairly comprehensive components which have emerged repeatedly in different literatures (e.g. Foss and Saebi, 2015; Magretta, 2002; Teece, 2010; Saebi et al., 2017). Value proposition is the unique value the business offer provides to its customers, often realized based on the specific customer segments targeted and the intended offering (e.g. product, or service, or a mix). The value chain architecture shows how the firm uses its core resources and activities complemented by its partner networks to realize its value proposition. The profit model explains how the firm generates revenue based on the cost structure and the pricing logics it applies.

Table 3: Selected definitions of BM (ordered chronologically).

Authors	BM definition	BM components
Mahadevan (2000)	"A unique blend of three streams that are critical to the business. These include the value stream for the business partners and the buyers, the revenue stream, and the logistical stream". (p.59)	Logistical stream Value stream for partners and buyers network Revenue stream
Magretta (2002)	"Business models are, at heart, stories – stories that explain how enterprises work […] The business model tells a logical story explaining who your customers are, what they value, and how you will make money in providing them that value." (p.4)	Value to customer Customer definition Revenue logic Economic logic
Andrén et al. (2003)	"What, in practice, is usually referred to as a 'business model', composed of three key components: a description of what the company offers to its customers (an offering consisting of products and/or services), who these customers are (market and customer segments), what value is created and how this value is shared between all involved actors (revenue model)". (p.551)	An offering consisting of products and/or services, Market and customer segments Revenue model
Mitchell and Coles (2003)	"A business model comprises the combined elements of "who", "what", "when", "why", "where", "how", and "how much" involved in providing customers and end users with products and services". (p.16)	How to create? Who to create for? Where to operate? What to offer? How much customers pay?
Morris et al. (2005)	"A business model is a concise representation of how an interrelated set of decision variables in the areas of venture strategy, architecture, and economics are addressed to create sustainable competitive advantage in defined markets." (p.727)	How do we create value? What is our source of competence? Who do we create value for? How do we make money? How do we competitively Position ourselves? What are our time, scope, and size ambitions?
Osterwalder et al. (2005)	"A business model is a conceptual tool that contains a set of elements and their relationships and allows expressing the business logic of a specific firm. It's a description of the value a company offers to one or several segments of customers and the architecture of the firm and its network of partners for creating, marketing, and delivering this value and relationship capital, to generate profitable and sustainable revenue streams." (p.17)	Customer segments Value proposition Distribution channel Customer relationships Revenue streams Key resources Key activities Key partnerships Cost structure
Shafer et al., (2005)	"We define a business model as a representation of a firm's underlying core logic and strategic choices for creating and capturing value within a value network." (P.202)	Create value: Resources/ assets Processes/ activities Value network Capture value: Cost Financial aspects Profit Strategic choices
Chesbrough (2007)	"At its heart, a business model performs two important functions: value creation and value capture. First, it defines a series of activities, from procuring raw materials to satisfying the final consumer, which will yield a new product or service in such a way that there is net value created throughout the various activities […]. Second, a business model captures value from a portion of those activities for the firm developing and operating it." (p. 12)	Structure of the value chain Position of the firm in the value network Articulation of Value proposition Market segment Revenue generation mechanism Cost structure and profit potential Competitive strategy
Johnson et al. (2008)	"A business model consists of four interlocking elements that taken together create and deliver value." (p. 52)	Key resources incl. people, technology, equipment, information, partnerships, etc. Key processes Customer value proposition incl. target customer, offering and job to be done Profit formula consisting of revenue model, cost structure, margin model, and resource velocity

Teece (2010)	"A business model articulates the logic and provides data and other evidence that demonstrates how a business creates and delivers value to customers. It also outlines the architecture of revenues, costs, and profits associated with the business enterprise delivering that value." (p. 173)	Technologies Customer benefits Target markets Revenue streams Ways of capturing value
Amit and Zott (2012)	"A system of interconnected and interdependent activities that determines the way the company "does business" with its customers, partners and vendors" (p. 42)	Content Structure Governance
Bucherer et al. (2012)	"The business model abstracts the complexity of a company by reducing it to its core elements and their interrelations and thus specifies the core business logic of the firm." (p. 184)	Value proposition Operational model Financial model Customer relations
Baden-Fuller and Haefliger (2013)	"We define the business model as a system that solves the problem of identifying who is (or are) the customer(s), engaging with their needs, delivering satisfaction, and monetizing the value." (p.419)	Customer segments Customer needs Value delivery Monetization of value
Girotra and Netessine, (2014)	"Any business model is essentially a set of key decisions that collectively determine how a business earns its revenue, incurs its costs, and manage its risks." (p. 98)	Revenues Costs Risks
Saebi et al. (2017)	"Although there is no generally agreed upon definition, many contributions to the literature define it in terms of the firm's value proposition and market segments, the structure of the value chain required for realizing the value proposition, the mechanisms of value capture that the firm deploys, and how these elements are linked together in an architecture". P.567	Structure of the value chain Value proposition and market segments Mechanism of value capture Firm-specific architecture in which the elements are linked

Another approach to conceptualizing the BM deals with identifying the BM's distinctiveness and connections in relation to other literature streams such as strategy or business planning (e.g. Richardson, 2008; Seddon and Lewis, 2003). For example, Teece (2010) views the BM as a conceptual model of the business, that reflects 'management's hypothesis' about who are the customers, what they want, and how they want it, and how the enterprise can organize to fulfill those needs and get paid for doing so, to generate profits. In this view, while the BM may become embedded in the business plan or cash flow projections, in essence it is not the same as the financial model of the business.

Early definitions of the BM, at least on the surface, seemed blended with business strategy, particularly when strategy was used as an integrated part in the BM (e.g. Chesbrough and Rosenbloom, 2002; Morris et al., 2005; Shafer et al., 2005). However, recent studies are in agreement that strategy and the BM are distinct (Casadesus-Masanell and Ricart, 2010; DaSilva and Trkman, 2014; Zott and Amit, 2008). While strategy puts greater emphasis on the value capture and competitive advantage aspects of the business (Demil et al., 2015), BM links value capture to value creation aspects of the business (which in turn is the core emphasis in the entrepreneurship literature (ibid.)). Casadesus-Masanell and Ricart (2010) state that the BM refers to the logic of the firm, the way it operates, and how it creates value for its stakeholders, whereas strategy guides the choice of BM through which the firm will compete in the market place. As they put it, "business

models are reflections of the realized strategy" (Casadesus-Masanell and Ricart, 2010, p. 204).

Moreover, the firm's BM is considered more generic than business strategy, and coupling the two protects the firm's competitive advantage through designing and implementing new BMs (DaSilva and Trkman, 2013; Teece, 2010). Therefore, although essentially separate from the BM, strategy analysis is considered a crucial step in new BM design to achieve a viable and sustainable BM (Teece, 2010). Further, the BM needs continuously to be adjusted and improved based on the firm's strategic orientations, to generate a sustainable competitive advantage

When opportunities or threats arise, firms may need to design new BMs or refine existing BMs. In response to changing conditions in the business eco-system not even well-established BMs can be assumed to be permanent (Lindgardt et al., 2009; Schneider and Spieth, 2013). This leads to another extension of the BM literature, discussing the BM beyond an important driver of commercializing new products or technologies, and instead as a distinct subject to innovation (Chesbrough, 2010; Mitchel and Coles, 2003; Pohle and Chapman, 2006).

2.3 Business model innovation

2.3.1 Conceptualization of the construct

Over the past 15 years, the BM field has expanded increasingly from predominantly conceptualizing and operationalizing the BM at a given point in time, to applying a more dynamic perspective in which changes to BMs are studied over time (Saebi and Foss, 2016). BMs have been discussed as a separate source of innovation "that complements the traditional subjects of process, product and organizational innovations" (Zott et al., 2011, p.1032). As an extension of the BM field, BMI is an emerging phenomenon that has captured increasing attention from both scholars and managers since the early 2000s.

Discussions related to BMs being purposefully innovated can be traced back to three papers by Mitchell and Coles (2003, 2004a, 2004b), two management consultants who co-founded Mitchell and Company, a business strategy and BM improvement firm based in Massachusetts. The authors argue that prior to the 1990s, once a company found a BM that worked, it applied strategies to replicate the model in other markets thereby benefiting from reduced long-term costs. Firms engaged in activities such as functional outsourcing in order to improve the efficiency of their existing BMs by reducing operating costs. As a consequence, established firms working with efficient BMs were experiencing inertia caused by maintaining their existing BMs, and BMIs were typically being introduced by new entrants to the market rather than leading market players. Tactical reactions by established firms consisted either of imitating the new entrant's BM (Casadesus-Masanell and Zhu, 2013) or acquiring startups before they established successful relationships with their potential customers through their BM advantages.

Since the 1990s, Mitchel and Coles (2003, 2004a) identified 70 major companies that embarked on continuous BMI between 1989 and 2003 and achieved reduced costs and higher industry positions more quickly than companies working on improving the efficiency of their existing BMs. Those companies included firms where the CEO had established a core vision to include regular BM changes, and create processes for innovations and improvements such as BM experimentation.

Since 2003, publications on BMI have proliferated to the point that the emerging field of BMI is being considered a separate field of research despite it being a spinoff of the BM literature (Foss and Saebi, 2017). Although practitioners and scholars have paid more attention to the phenomenon of BMI over the years, there remain many heterogeneities and inconsistencies in the conceptualization of the term which might be a reflection of similar inconsistencies rooted in BM conceptualizations (ibid.).

For example, in line with the innovation literature which refers to 'innovation' as both a process and an outcome (Crossan and Apaydin, 2010; Garcia and Calantone, 2002), BMI as a type of innovation has also been explained and discussed as both a process and an outcome. Contributions that conceptualize BMI as a process are either conceptual or explore BMI mainly in a particular industry, market context, or firm setting. Sosna et al. (2010) discuss the antecedents to and drivers of BMI in a Spanish dietary products business, and Yunus et al. (2010) focus on social BMs, while Laudien and Daxböck (2016) analyze BMIs in the context of average market players (i.e. players that are average in terms of performance, market position, and size.)

Contributions that focus on BMI as an outcome, describe the content of novel BMs, often drawing on a particular industry or market context or firm setting that has experienced the emergence of new and disruptive BMs. Karimi and Zhiping (2016) discuss the disruption to traditional newspaper companies caused by digitalization, Visnjic and van Looy (2013) discuss the impact of servitization BMI on manufacturing firm performance, and Matzler et al., (2013) describe the particular case of Nestlé in developing the novel BM of Nespresso.

These two streams of work often adopt different perspectives to BMI; the former is more interested on the dynamics of the BMI, while the latter tends to investigate the content of BMI ex post (Foss and Saebi, 2017). Divergences about what BMI is and consists of can be tracked in the several definition and conceptualizations of BMI in the literature. Table 4 presents a number of such definitions.

Table 4: Selected definitions of BMI (ordered chronologically).

Authors	BMI conceptualization	Positioning		
		Novelty	Outcome	Scope
Mitchell and Coles (2003)	"When a company makes business model replacement that provide product or service offerings to customers and end users that were not previously available, we refer to those replacements as business model innovations." (p.17)	New to firm	Replacing	At least four out of six elements
Markides (2006)	"Business model innovation in the discovery of a fundamentally different business model in an existing business." (p.20)	New to firm	Parallel or replacing	n.a.
Santos et al. (2009)	"Business model innovation is a reconfiguration of activities in the existing business model of a firm that is new to the product service market in which the firm competes." (p.14)	New to market	Replacing	Individual components
Aspara et al. (2010)	"Initiatives to create novel value by challenging existing industry-specific business models., roles and relations in certain geographic market areas." (p.47)	New to industry	n.a	n.a
Demil and Lecoque (2010)	"We view business model *evolution* as a fine-tuning process involving voluntary and emergent changes in and between permanently linked core components, and find that firm sustainability depends on anticipating and reacting to sequences of voluntary and emerging change, giving the label 'dynamic consistency' to this firm capability to build and sustain its performance while changing its business model." (p. 227)	n.a.	Replacing	In and between core components
Björkdahl and Holmén (2013)	"A business model innovation is the implementation of a business model that is new to the firm". (p.214) "We argue that a business model innovation is a new integrated logic of how the firm creates value for its customers (and users) and how it captures value." (p.215)	New to the firm	Parallel or replacing	New value creation and value capture logic
Casadesus-Masanell and Zhu (2013)	"At root, business model innovation refers to the search for new logics of the firm and new ways to create and capture value for its stakeholders; it focuses primarily on findings new ways to generate revenues and define value propositions for customers, suppliers, and partners." (p.464)	New to market	Replacing	n.a.
Khanagha et al. (2014)	"Business model innovation activities can range from incremental change in individual components of business models, extension of the existing business model, introduction of parallel business models, right through to disruption of the business model, which may potentially entail replacing the existing model with fundamentally different one." (p.324)	New to firm and/or new to industry	Parallel or replacing	Minimum individual components
Massa and Tucci (2014)	"We propose that BMI may refer to (1) the design of novel BMs for newly formed organizations, or (2) the reconfiguration of existing BMs" (p. 424)	New to firm and/or industry	Parallel or replacing	n.a.
Zott and Amit (2015)	"The 'newness' of the business model may refer to any of its design elements– that is, content, structure, or governance. Because of the systemic, interconnected nature of the business model, a change in any of these elements may engender further changes at the system level […] The more wide-ranging the changes at the system-level the more encompassing (and radical) the BMI." (p. 397)	Incremental or radical depending on the degree of change	n.a	Any of the elements
Clauss (2016)	"Business model innovation relates to the innovation of a system of products, services, technology, and/or information flows that goes beyond the focal firm." (p.3)	New to market	n.a.	All three elements

Saebi et al. (2017) Foss and Saebi (2017)	"Business model innovation is defined as the process by which management actively innovate the business model to disrupt market conditions." (p.569) "We define BMI as designed, novel, nontrivial changes to the key elements of a firm's business model and/or the architecture linking these elements." (p. 201)	New to market	Replacing	Key elements and/or their linkages
Spieth and Schneider (2016)	"[we] conceptualise business model innovation as a 'new-to-the firm' change that affects at least one out of three business model dimensions: value offering, value creation architecture, and revenue model logic"	New to firm	n.a.	At least one element

Given the BM construct has been conceptualized mainly in the form of a number of BM elements and their interrelationships, BMI definitions accordingly perceive the innovation in the BM as going beyond innovating a product or service, and to involve innovation at the system level (Lindgardt et al., 2009; Santos et al., 2009).

An analysis of the different definitions of BMI shows that existing divergences in the positioning of definitions of BMI are reflected along different dimensions (see Table 4). The first dimension deals with the degree of novelty of BMIs. While some scholars view BMI as a game-changing and disruptive type of innovation that is new to the industry (e.g. Aspara et al., 2010; Johnson et al., 2008; Saebi et al., 2017), other scholars suggest that BMIs can be new only to the firm, and not necessarily to industry (e.g. Björkdahl and Holmén, 2013; Khanagha et al., 2014; Zott and Amit, 2015).

The second dimension deals with whether the BMI process results in a BM replacement or in multiple BMs. Definitions that view BMI as a renewal or transformational process often consider the outcome of the process to be a new BM which replaces the old one (Aspara et al., 2013; Mitchel and Coles, 2003; Sandström and Osborne, 2011). Other works suggest that firms can compete with dual or multiple BMs, and can develop a portfolio of different BMs to compete in different markets (e.g. Markides and Charitou, 2004; Sabatier et al., 2010).

The third dimension is related to the scope of the required change in BM components. Johnson et al. (2008, p. 57) argue that BMIs occur only "when significant changes are needed to *all four element*s [key resources, key processes, customer value proposition, and profit formula] of [the] existing business model". On the other hand, Zott and Amit (2015, p. 397) argue that "the 'newness' of the BM may refer to *any* of its design elements–that is, its content, structure, or governance". In between these two extremes, several authors argue that BMIs may be manifest in changes to 'two or more components' (e.g. Lindgardt et al., 2009) or 'at least four out of six' components (Mitchell and Coles, 2003).

In this thesis, the definition of innovation– and accordingly BMI as a type of innovation– follows the Oslo manual (OECD and Eurostat, 2005) definition which sets a minimum

requirement for an innovation to be "new to the firm" (i.e. it does not have to be new to the world). Therefore, BM innovation involves finding a new way of creating, proposing, or capturing value and implementing changes to the existing model, or adding a new BM (Chesbrough, 2007; Markides, 2006; Santos et al., 2009). BMI must entail justified changes to BM elements or their linkages as opposed to traditional types of innovation. Accordingly, BMI is not 'mere' product or service innovation, nor it is a process or organizational innovation (Björkdahl and Holmén, 2013) which often involves changes only in the offering (for product innovations) or in processes and structures (for process and organizational innovations). While BMI may redefine an existing product or service, the processes through which the value is created, and/or how the firm profits from the customer offering, it does not require the creation of a new product or service. Similarly, a BMI may include new processes, new revenue models, or other types of innovation but is required also to offer a new integrated logic for how value creation, value proposition, and value capture are linked to one another.

2.3.2 Barriers to BMI

Despite the many advantages of BMI highlighted in literature, established firms face substantial challenges and barriers to working with BMIs, and in many instances, they are prone to failure. As the configuration of BM components depends heavily on the interactions among those components, this configurational nature of BMs may complicate BMI processes since the underlying interactions among components may be difficult to predict or to change (Berends et al., 2016). Chesbrough (2010) suggests that existing firms may face two types of barriers to BMI. The first type are structural or organizational barriers and may consist of the following forms:

a) Allocation of resources to the new BM; BMI is characterized by extensive resource requirements which is another challenge in the process. There may be resistance to allocation of resources to the new BM, and inertia towards changing BM components if this conflicts with the existing assets and capabilities (Chesbrough and Rosenbloom, 2002; Hadjimanolis, 1999; Tripsas and Gavetti, 2000).

b) Lock-in that manifests in switching costs for customers or other stakeholders may prevent adaptation to the new BM (Amit and Zott, 2001).

c) Complexities related to the development of the new BM in parallel with the existing one (Mezger, 2014) and management of multiple BMs (Markides and Charitou, 2004; Santos et al, 2009) if the new BM conflicts with the existing one.

d) Inertia due to uncertainty about the effectiveness of new BMs (Andries and Debackere, 2007) caused by the system of existing BM elements, and the complexity of their linkages. The complexity of BMs related to interactions among BM components adds to the difficulty of anticipating system effects resulting from changes to individual

components (Berends et al., 2016), and the performance implications of the new BM *ex ante* (Lindgardt et al., 2009; Stieglitz and Foss, 2015).

The second types of barriers are cognitive barriers (Chesbrough, 2010), expressed in an inability to identify new ways of doing business. These types of barriers are related to:

e) Managerial cognition that hinders the envisioning of alternative BMs, and identifying the opportunity inherent in BM innovation (Bettis and Prahalad, 1995; Chesbrough and Rosenbloom, 2002). BM as a heuristic logic can act as a mental map influencing how new ideas are perceived (Massa and Tucci, 2014). Managers may filter out information that is not in line with the current BM, and hence not considered 'valuable'. At a cognitive level, the BM is similar to the notion of a dominant logic (Prahald and Bettis, 1986) towards how firms create and capture value. In the case of a successful film, the dominant logic can prevent mangers from realizing the opportunities that fall outside of the prevailing logic, and instead create a dominant logic trap (Chesbrough, 2010) over time

f) Lack of top management leadership to envision BMI and to figure out the required structures, capabilities, and processes of the new BM (Berglund and Sandström, 2013; Chesbrough, 2010; Doz and Kosonen, 2010; Johnson et al., 2008). Realizing the need for BM change is related not only to top management leadership. It is related also to the distribution of authority and decision making in the management team. In companies where middle managers have the decision making authority and power to decide about cooperation with external parties, the likelihood of recognizing the need for BMI is higher (Foss and Saebi, 2015).

2.3.3 BMI processes

Traditionally most established firms employed one BM in a bid to achieve competitive advantage based on economies of scale through efficient exploitation of their BM (Slywotzky, 1996). Accordingly, BMs are considered stable during periods of success (Doz and Kosonen, 2010). However, different triggers or antecedents may require the BM to be innovated and adapted to match changing conditions in the business eco-system (Demil and Lecocq, 2010; Teece, 2010). Cassadesus-Masanell and Ricart (2010) observe two phenomena that can be considered antecedents to BMI. First, established firms need to develop new BMs (low cost BMs) alongside their traditional BMs, when entering emerging markets in developing or underdeveloped countries due to fundamentally different economic, social, and cultural environments (Winerhalter et al., 2015). Second, post-industrial technologies (e.g. software) require organizational architectures and governance structures that are fundamentally different from traditional ways of conducting business. Such technologies are accompanied by the emergence of novel BMs often brought to market by new ventures (e.g. software as a service rather than a product (Susarla et al., 2009)).

Disruptive BMs or technologies brought to market by new ventures often threaten incumbents operating established BMs in those markets (Khanagha et al., 2014). Incumbents may have to rethink their BMs in response to such disruptive BMs (Casadesus- Masanell and Zhu, 2013). Under the high level of uncertainty and complexity involved in the process, incumbents may face a dilemma in deciding whether to adopt a new BM or to stick to their existing BM since BMI may cannibalize their existing BM (Khanagha et al., 2014). In this situation, the incumbent will likely evaluate the opportunity inherent in adopting a new BM, and the competences required for success (Markides and Oyon, 2010). Possible adaptation strategies include exploring the adoption of the disruptive BM (i.e. explorative adoption), or strengthening the existing BM in order to compete with the newcomer (i.e. exploitative strengthening) (Osiyevskyy and Dewald, 2015). Markides and Oyon (2010) propose a third strategy (i.e. a counter attack), arguing that to gain competitive advantage, the incumbent might introduce a third BM, different from its existing BM and the BM of the industry disruptor.

Other antecedents to BMI discussed in the literature include changes in stakeholder demands (Ferreira et al., 2013; Miller et al., 2014; Saebi et al., 2017; Velamuri et al., 2013), increasing globalization (Lee et al., 2012), changes to the competitive environment (de Reuver et al., 2013; Johnson et al., 2008; Markides and Oyon, 2010), strategic discontinuities (Doz and Kosonen, 2010), technological disruptions (Baden-Fuller and Haefliger, 2013; Wirtz et al., 2010; Sabatier et al., 2012), and crisis events (Sosna et al., 2010).

Despite BMI being promoted mainly as a strategic tool for improving competitiveness in a deliberate way (Mitchell and Coles, 2003), more recently scholars have argued that exploring new BMs is more likely to occur under conditions of perceived threats rather than opportunities (Saebi, et al., 2016). While some scholars downplay the role of resources for BMI by suggesting that BMI can be initiated by a recombination of existing resources under conditions of scarce resources (Amit and Zott, 2012), others argue that on many occasions, the existing BM acts as a financial buffer to cross-subsidize the new BM (Sosna et al. 2010; Bohnsack et al., 2014). Under the high level of uncertainty involved in BMI, the BMI may become suffocated within a struggle for resources with the existing BM which complicates pursuit of deliberate BMI (Laudien and Daxbök, 2016). To overcome this problem, firms often implement dual BMs (Markides and Charitou, 2004) which delimits the opportunity to recombine resources embedded in the existing BM.

When conceptualizing BMI processes, previous literature has taken different approaches. But before analyzing how BMI processes are theorized, I also briefly review how *process* in general is conceptualized in organization research.

One way that process is used in organizational research is as an explanation for a variance theory in that the process provides a logic that explains the causal relationship between some independent and dependent variables. However, in this usage there is no direct observation of the process. Poole et al. (2000) argue that to understand how innovation occurs, researchers should shift the line of inquiry and analysis of process. These authors suggest that "rather than first generalize in terms of variables, researchers should first generalize in terms of a narrative history or a story. Only in this way will the key properties of order and sequence of events be preserved in making theoretical generalization about processes." *(*Poole et al., 2000*,* P.19)

This leads to another definition of process understood from an evolutionary and developmental perspective, as a temporal sequence of events or activities that describe how things changes over time (Langley, 1999; Poole et al., 2000). Therefore, the basic data that process research must deal with is sequences of events or activities that must be interpreted to explain and understand the process (Poole et al., 2017). This usage of process provides "more dynamic ways of understanding organizational phenomena, incorporating fluidity, emergence, flow, and temporal and spatial interconnections." (Langley and Tsoukas, 2017, p. 2).

A common explanation in the literature uses phasic analysis which attempts to identify the linear sequence of events or activities through which a process unfolds. This type of process explanation posits that the process occurs in a series of stages where stage A gives rise to stage B, which then leads to stage C, and so on, each stage building on the previous one. For example, Garud et al. (2013) adopt a phasic explanation in describing product innovation process to start with invention (the emergence of an idea), continue to development (the elaboration of the idea), and implementation (the widespread acceptance of the innovation). Another type of process explanation identifies short sequences of actions or events that generate the process such as the variation–selection–retention cycle which constitutes the sense-making process (Weick et al., 2005). Often short-cycle explanations assume that the larger event sequence emerges from these cycles (Poole et al., 2017).

In the context of BMI processes, one approach taken in existing literature has been to generate process frameworks to allow firms to develop new BMs. Some frameworks assume that BMIs follow certain stages or steps, moving from an idea to designing a new BM, into development, and further to its implementation (Bucherer et al., 2012; Frankenberger et al., 2013). This approach which splits innovation activities into different phases or stages to be followed in a step-wise manner is widespread in other innovation literatures (Zaltman et al., 1973; Utterback, 1971). Since several of these process models are derived conceptually from the innovation management literature, some have commonalities with the stage-gate processes related to new product development (Cooper, 1990).

One assumption is that firms design and analyze different BM alternatives through cognitive and analytical processes and then test the promising alternatives. This suggest that BMs have to be conceived first and then put into action (Berends et al., 2016; Funnari, 2015; Osterwalder and Pigneur, 2010).

Sheehan and Stabell (2007) propose a three-stage process for BM development in knowledge intensive organizations. Their framework works with four positioning characteristics of value creating activities, fee structure, reputational capital and governance. Based on these four elements, their linear model begins by identifying the positioning characteristics followed by mapping the firm and its competitors in relation to these characteristics, and then evaluating how to improve the current competitive positioning by altering one or more of the four positioning characteristics.

Similarly, Eurich et al. (2014) propose a six-step approach to structuring the process of BMI. The six steps are: (1) determining the firm's mission in relation to the business environment, (2) analyzing the interdependencies, (3) analyzing different design alternatives, (4) creating different BM alternatives, (5) selecting one of the BM alternatives, and (6) testing the alternative BM until the desired new BM is identified.

The idea for new BM design may come from imitation of already existing BMs. Once implemented, BMs can be subject to imitation and replication (Doz and Kosonen, 2010; Teece, 2010) if all of the components of the BM become transparent to others. In fact, adopting a successful BM is not confined to the competitors in the respective industry in which it was originally implemented. Recent articles discuss how the idea for a BMI can come from successful BMs in other industries via the processes of abstraction, analogical reasoning, and adaptation (Enkel and Mezger, 2013; Martins et al., 2015). The IBM Global C-suite Study (2016) of more than 5,000 executives revealed that most companies are experimenting with BM analogs to deliver value since CEOs believe that creating a BM in a quick and scalable manner can be complex and time consuming. A commonly cited example of a successful BM that has become an analog for replication in other industries is Gillette's razor/blade BM. At the beginning of the 20th century Gillette offered a cheap basic product (razor) complemented by blades that had to be purchased regularly. This BM has been implemented by several other companies including Nestlé whose Nespresso machines are competitively priced but need to complemented by highly profitable (for Nestle) exclusive coffee capsules (Amit and Zott, 2012; Matzler et al., 2013).

Examples such as these have led BMI scholars to attempt to identify *BM patterns*– existing solutions that have proven successful for other companies and industries (Abdelkafi et al., 2013; Gassmann et al., 2014; Remane et al., 2017). Gassmann et al., (2014) underline that 90% of all BMs are recombination of existing BM patterns; they provide examples of 55 such existing patterns. Drawing on 22 BM pattern articles,

Remane et al. (2017) identified 182 patterns which they collated in a BM pattern database which they have made easily accessible[9] to entrepreneurs.

In contrast to the assumption that BMs are first analytically designed and evaluated, the second approach taken by scholars in conceptualizing BMI describes this process as emerging from experimentation and trial-and- error learning (McGrath, 2010; Mezger, 2014; Sosna et al. 2010). This is more action-oriented, suggesting that BMI is a chaotic process, and the key to find a viable BM is to draw on learnings involved in its operation (i.e. actions and its effects are the sources of learning (Berends et al., 2016). Trial-and-error problem-solving begins with a problem and selection of a few alternative solutions for that problem, that are tested against necessary requirements. The knowledge gained from each experiment is used to refine the solution alternatives and design new experiments. This iterative process continues until a satisfactory solution is identified (Thomke et al., 1998).

Sosna (2010) discusses how the search for a viable BM is first conceptualized during an experimentation phase followed by an exploitation phase during which actual implementation occurs. In this view, the new BM is argued to be non-linear and difficult to plan and decide *ex ante*. Rather it emerges through an extensive process of experimentation and trial-and-error learning, followed by required adaptations *ex post* (Chesbrough, 2010; Mintzberg and Waters, 1985; Sosna et al., 2010). Table 5 summarizes a number of selected studies that conceptualize the BMI process.

Table 5: Selected studies on the process of BMI (ordered chronologically, Source: Paper I).

Study	Focus	Method	Contribution
Voelpel et al. (2004)	BM reinvention	Conceptual	The wheel of BM reinvention consisting of four dimensions: Customer sensing, technology sensing, business infrastructure sensing, and economic/ profitability sensing.
Sheehan and Stabell (2007)	New BMs for Knowledge intensive organizations	Conceptual	Three stage process of BM innovation: 1. Identifying four positioning characteristics: value creating activity, fee structure, reputational capital and governance. 2. Mapping the firm and its competitors using the four positioning characteristics. 3. Evaluating how best to improve the firm's competitive position by altering one or more of the four positioning characteristics.
Sosna et al. (2010)	Antecedents and process	Longitudinal single case study	Applying learning perspective to BMI. Mapped out a two-part development process consisting of exploration and exploitation.
McGrath (2010)	Firm's approach to BMI	Conceptual	Suggests a discovery-driven approach, involving experimentation, and learning to discover and exploit new BMs.

[9] Business Model Pattern App, supported by Android.

Bucherer et al. (2012)	Matching BMI and product innovation	Multiple case study of 11 BMI cases	Distinction between two origins of BMI; opportunity and threat. Four phases of analysis, design, implementation, and control drawing on innovation management literature.
Frankenberger et al. (2013)	Structure and challenges	Multiple case study of 14 BMIs within six companies	Development of 4I framework consisting of four process phases namely as: initiation, ideation, integration, and implementation. The framework is derived from innovation management literature and adapted to BMI processes from the cases.
Eurich et al (2014)	BM design	Conceptual	Proposing a six-step approach to BMI based on principles of network thinking. 1. Determination of the mission and business environment. 2. Analysis of interdependencies. 3. Determination and analysis of design alternatives. 4. Creation of BM design alternatives. 5. Selection of one BMI. 6. Test and realization of the BM.
Khanagha et al. (2014)	Process	Longitudinal single case study	Identifying five major phases in the process in relation to organizational structure: 1. Screening and speculation, 2. Initiating experimentation through an embedded temporary organization, 3. Continuation of experimentation through an independent structure, 4. Shrinkage of the separated structure and delegation of tasks, 5. Dissolution of the temporary organization and full integration of exploratory activities
Cavalcante (2014)	Process	Conceptual	Introducing a new, process-based artefact for the design of BM change, consisting of three main phases: 1. Identification of the central components of the firm's BM and their core processes, 2. Brief description of the change initiative and how the core processes will be affected, 3. Analysis of main challenges and solutions to them
Laudien and Daxböck (2016)	Process	Multiple case study data on ten average market players	Explain implementation of a new BM based on success or failure in completing a four-phase framework: 1. Monitoring the BM fit beyond the industry-level, 2. BM development, 3. Opening up the BM, and 4. Deliberate BMI

2.4 Synthesis and problematization

As discussed above, the BMI field is characterized by scattered attention in different explanations and lack of cumulative theorizing (Foss and Saebi, 2017). Lack of theory development could be justified in part by existing problems related to construct clarity (precision in defining) and lack of agreement about definitions of BM and BMI. Since the early 2000s, the field has developed to provide a multi-disciplinary platform for scholars from different disciplines to bring to the table new perspectives which are further igniting debate on what BMI is and is not. For example, BMI in the context of entrepreneurship has been considered in some depth from an opportunity-driven perspective but in the case of established firms recently scholars have proposed that BMIs

could be driven also by experience of threat (Khanagha et al., 2014; Saebi et al., 2017). Moreover, while initially BMI was discussed mostly as a strategic tool to improve competitiveness in a deliberate way (Mitchel and Coles, 2003), scholars have argued recently that BMI can result also from emergent reactions to changes in the environment (Demil and Lecocq, 2010).

Two distinct streams of conceptualization are apparent. The first conceptualizes BMI statically, either by describing BMI as an outcome (i.e. a new type of BM change which is innovative), hence focusing on the content of the BMI. The innovativeness of the new BM is usually discussed in relation to the changes applied to core BM components and their relationships (e.g. Johnson et al., 2008; Mitchel and Coles, 2003). Such conceptualizations tend to be more variance-related (van de Ven and Poole, 2005), in that an outcome-driven explanation (Aldrich, 2001) examines the degree to which a set of independent variables explains the changes in the outcome criteria. The change in the BM therefore, becomes a function of applied changes in the BM's core components and their links. Accordingly, different scholars have proposed different required changes to the core elements of the BM and their linkages required for a BMI (see Table 4).

I argue that such BMI conceptualizations take a "snapshot" perspective to the BM by comparing its current state to its previous state, and emphasizing the novelty inherent in the applied changes. To be able to more systematically conceptualize "BMI in motion" (Ritter and Lettle, forthcoming) the second stream of literature discusses BMI as a process, highlighting different stages in the BMI process, or the organizational characteristics that facilitate or hinder that process (Foss and Saebi, 2017).

Although the process orientation seems to be gaining momentum in the more recent publications on BMI, a process focus is noticeably absent in empirical research on BMI. The current BMI literature which addresses BMI processes offers only a few empirically-driven explanations for how BMI processes unfold, which often are based on a particular firm or industry (Dunford et al., 2010; Pynnönen et al., 2012; Sosna et al., 2010). These explanations are not always consistent, and often do not fully match the empirical reality. For example, while some works emphasize the importance of the cognitive domain in the search for alternative BMs (Aspara et al., 2013; Eurich et al., 2014; Sheehan and Stabell, 2007), others have described BMI as an ongoing learning process (Chanal and Caron-Fasan, 2010) characterized by experimentation (McGrath, 2010), and trial-and- error learning (Mezger, 2014; Sosna et al., 2010).

Moreover, from a practical point of view, the pursuit of BMI by established firms can be very difficult and is prone to failure (Pauwels and Weiss, 2008). Complexity arises from uncertainty about the effectiveness of the new BMs, and configurations of interdependent BM components and their interactions under uncertainty (Baden-Fuller and Mangematin, 2013; Klang et al., 2014). Moreover, for established firms that develop a new BM in

parallel to existing ones, whether to manage the new and existing BMs autonomously or interactively can be another dilemma. As the existing BM is often required as a financial buffer to cross-subsidize the new BM, firms may draw on components of their existing BM to create synergies between the BMs (Kim and Min, 2015; Markides and Charitou, 2004). However, as resources are spent mostly on the core businesses, the new BM may get suffocated by the forces of inertia acting on its components, and by potential conflicts between the old and new BMs (Chesbrough and Rosenbloom, 2002; Tripsas and Gavetti, 2000). These issues call for more empirical research on BMI from a dynamic and processual perspective.

In this thesis, I apply an event-driven process perspective (van de Ven and Engleman, 2004) on BMI to understand how the phenomenon unfolds, and why it unfolds in a certain way (van de Ven and Huber, 1990), by observing the flow of events over time (see Figure 2). Therefore, I intend to shift the inquiry from outcome to process to advance understanding of the BMI phenomenon by studying the nature of the BMI process, when it can be said that the process has begun and ended, and whether it holds to a noticeable temporal pattern of events and/or activities that occur over time (see Figure 2). In following this logic, the purpose of this thesis is to explore BMI processes in multiple industrial and organizational contexts. To fulfill this overarching purpose, this thesis in particular seeks answers to two RQs and their underlying link:

RQ1: Why and when do companies innovate their BMs?

RQ2: How does the process of BMI unfold?

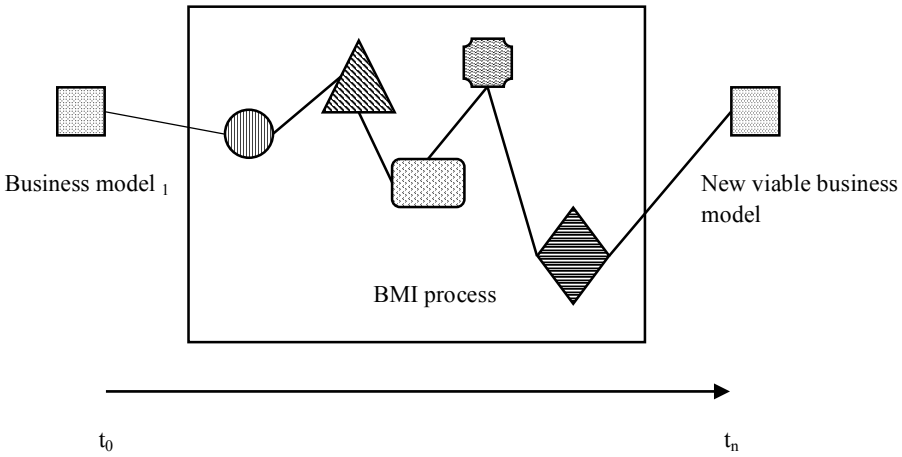

Figure 2: An event-driven process view of BMI (adapted from Langley, 1999).

3 Research design and methods

This chapter describes the methodological orientation of this thesis. First, the motivation for the research design related directly to the four appended papers is discussed. Second, the selected research methods used to collect and analyze data are described, and the reliability and validity of the methods employed are discussed.

3.1 Methodological approach

Starting from an empirical phenomenon, the overall research approach applied in this thesis can be characterized as phenomenon-based. This type of research aims at identifying, capturing, describing, and conceptualizing a new or recent phenomenon of interest and relevance to management and organization science, directed towards theorizing and synthesizing (von Krogh et al., 2012; Schwarz and Stensaker, 2014). In contrast to theory-driven research which aims to "refine, enhance, advance, and generally stimulate theory" (Schwarz and Stensaker, 2014, p. 479) by focusing on specific and often already existing theories, phenomenon-driven research is at an abstract theoretical level. The goal here is to facilitate conventional understanding and contribute some practical implications to a body of knowledge. Accordingly, phenomenon-based research uses empirical data and can draw on multiple theories to understand and explain a new or recent phenomenon of interest, and its relevance for practitioners and researchers (Schwarz and Stensaker, 2014; von Krogh et al., 2012).

The projected product of phenomenon-based research is usually far from becoming a formal theory, but it reflects an early phase of scientific inquiry (Blau, 1970; von Krogh et al., 2012). With growth of interest in a particular phenomenon, research follows three consecutive phases of embryonic, growth and maturity towards theorizing (von Krogh et al., 2012). To formulate the research purpose in harmony with existing and missing knowledge in the field, I reflected on the consecutive phases followed in phenomenon-based research and applied them to the emerging field of BMI. This step was essential to

match the chosen research designs and methods with the type of knowledge the research should produce (Gephart, 2004).

During the embryonic phase, the phenomenon needs to be distinguished from other known phenomena, and scholars tend to focus on individual parts that are considered to be important. In the BMI field, attempts can be traced back to early contributions of conceptualizations and development of classification schemes (Chesbrough and Rosenbloom, 2002; Mitchell and Coles, 2003; Santos et al., 2009; Teece, 2010). Initial contributions to conceptualizations of BM and BMI have adopted different perspectives in tackling these phenomena. For example, some works focus on radical and novel BMs that represent drivers of growth and competitive advantage (Amit and Zott, 2012), others conceptualize the phenomena in contrast to other known phenomena such as strategy (Morris et al., 2005; Casadesus-Masanell and Ricart, 2010) or product innovation (Bucherer et al., 2012).

During the growth phase towards theorizing, the phenomenon being studied attracts attention from a larger community of academics who attempt to capture various aspects of the phenomenon using different research designs, and to compare them with new and existing theory (von Krogh et al., 2012). Identified discrepancies between the phenomenon and available theories in turn, can attract further interest from scholars who start to interact and build on each other's work to achieve a level of consistency and accumulation of effort. Finally, during the mature phase studies achieve some level of consistency. Accordingly, scholars become aware of certain aspects of the phenomenon that are more challenging and apply a variety of research designs and methods to try to explain them (von Krogh et al., 2012).

Since lack of consistency and cumulativeness of knowledge is present in BMI research (Foss and Saebi, 2017), entry to the growth phase is evident only in some very recent attempts to accumulate knowledge on the phenomenon through the design of special issues (e.g. *Long Range Planning journal,* 2010, 2013, 2017; *R&D Management,* 2014 and *International Journal of Innovation Management,* 2013) and structured literature reviews on BMI research (e.g. Foss and Saebi, 2017; Schneider and Spieth, 2013). This stream of work has substantial merit since it identifies essential gaps in BMI research, and highlights directions for future research (Foss and Saebi, 2017; Schneider and Spieth, 2013).

In phenomenon-based research the researcher is required to define the phenomenon being studied. I made certain choices related to how I view BMI, and accordingly formulated the research objective. In addition to contributions made to the BMI field, to anchor my methodological choices I drew on organizational change research more generally. When tackling different phenomena, organization scholars take different ontological views of the social world and the essential nature of the organization. One approach is to view the

social world as a constellation of *things,* where processes represent change in those things; another approach is to view the social world as a world of *processes,* in which things are reifications of those processes (Tsoukas, 2005; van de Ven and Poole, 2005). In applying these two ontological views to innovation studies for example, it becomes clear that innovation at times has been treated as an outcome (e.g. implementation of a new or significantly improved product, process, marketing method, or organizational method, Oslo Manual, 2005), and sometimes as a process (e.g. activities that shape the transformation of novel ideas into an offer with economic value, van de Ven and Huber, 1990).

Gioia et al. (2012) emphasize that while the traditional approach to theory building through construct development and validation has been useful in the relatively short history of organization research, to understand the core of organizational experience we need to focus on the *processes* by which organizing and organization unfold (Langley, 1999).

A process explanation of a phenomenon may include a story of critical events and even turning points, how one event leads to a subsequent event, and emergent actions and activities shaping an overall pattern (Pentland, 1999; van de Ven and Huber, 1990; van de Ven and Poole, 2005).

3.2 Research design

The majority of the research on the construct of BMI is either conceptual or draws on empirical data from retrospective studies of novel BMs in treating BMI more as an outcome than a process. I take a dynamic perspective on BMs as being under influence of processes of innovation, change and renewal, hence highlighting the fundamental importance of studying the process through which BMIs unfold. Accordingly, I have chosen to apply a process methodology which deals with understanding how the phenomenon unfolds and why it unfolds in a certain way (van de Ven and Huber, 1990).

Process research seeks to understand and explain the reality in terms of interlinked events, activities, and choices based on their temporality and flow. Process studies address questions of how and why things emerge, develop, grow, or terminate over time (Langley, 1999; van de Ven and Huber, 1990). This type of research is distinct from variance research in focusing on the relationships among dependent and independent variables to understand causality explanations and uniformity across contexts (Langley et al., 2013; Poole et al., 2000).

One approach to studying a phenomenon processually and the approach applied in this thesis, is to view "process as evolution" (Fachin and Langley, 2017) where the focus is on how an entity changes or evolves over time.

Thus, *process* is defined as a sequence of events, activities, and choices ordered over time that explain how things change over time by studying what happened, when it happened, and who was involved (Langley, 1999).

Focusing on the temporal occurrence of significant events, the researcher therefore becomes critical in determining the key events along the process and she sometimes does that by defining the critical events which may be major turning points in the storyline or may instead ask the participants to identify the significant events (van de Ven and Poole, 2005). Just as historians are concerned with reconstruction and interpretation of the connections among historical events, a fundamental aspect of process research is to conceptualize and find patterns in event sequences (Langley, 1999; Poole et al., 2017).

I embarked on my endeavor by synthesizing what has already been written in parallel with empirical observation of the phenomenon to gain greater insight into the practical problems that established firms have to deal with. Empirical observation of the BMI as a phenomenon led to the choice of an exploratory, case study approach (Eisenhardt, 1989; Flyvbjerg, 2006). Explorative case studies are appropriate for broad and complex topics, and investigation of phenomena that are poorly understood (Dul and Hak, 2008; Flick, 2009; Miles and Huberman, 1994).

Since my aim is to explore BMI processes, a multiple case study approach was applied to identify emerging patterns and potential avenues for further research. Multiple case studies are designed to compare and contrast the findings from a number of case studies, and to understand what is unique to a particular case and what is generic across different cases (Bryman and Bell, 2007; Edmonson and McManus, 2007; van de Ven and Poole, 2005). The term ‘case’ in case study research is often taken for granted but needs to be defined since it can refer to an industry, an organization, a project, a person, or an event (Ragin and Becker, 1992). In this study, case refers to projects within the firm that involve the design and implementation of new BMs or transformation of existing BMs. A frequent critique of case studies is related to the generalizability of the findings (Yin, 1994). While this thesis intends not to generate prescriptive conclusions and generalize them to other contextual settings, external validity has been improved by multiple cases from different industries. Moreover, both retrospective and real-time cases are combined to increase validity (Leonard-Barton, 1990). The final sample includes 14 cases from a variety of industries including manufacturing, hygiene, construction, and home furnishing.

Four qualitative research studies were designed and carried out between 2012 and 2016, each study used in one of the four papers appended to this thesis. All four papers are explorative and qualitative despite drawing on different empirical material. All were selected in relation to the problem under investigation in each paper, following the suggestion in Eisenhardt (1989) and Siggelkow (2007). To fulfill the need for a comprehensive understanding of events and activities, it was neither necessary nor

preferable to choose cases randomly (Eisenhardt, 1989), and the cases were selected based on the new insights they would provide that were relevant to the RQs. It is important to select cases that ensure access to rich data necessary for process studies over time. Therefore, it was decided to mostly focus mainly on firms in Sweden (PI, PII, PIII) and Germany where one of the co-authors is based (PIV). The Swedish companies sampled are mostly Multinational Corporations (MNCs) with superior customer knowledge and innovation activity in product and services and the BM for one of their core businesses in order to increase profitability. The focus on MNCs was based on lack of existing empirical knowledge about how established firms manage BMIs. To control whether or not size matters in observed process patterns, PI and PIV draw also on cases of SMEs and startups. This control variable could be important in relation especially to micro-management issues such as comparing the roles of CEOs in BMI processes in established firms versus SMEs.

Paper I is based on a study where I looked at processes of BMI in different contexts. As a starting point, I decided to focus on Sweden as the main geographical focus and included only established firms in the sampling, without focusing on a particular industry or level of firm maturity. Two of the largest Scandinavian business databases were used to identify the firms resulting in 100 companies from 6 different industry sectors. Initial contacts were made with five companies within each sector chosen randomly, who were asked whether or not their company had been engaged in a BMI project over the previous five to ten years. Companies that replied yes and were willing to participate in the comparative case study were included in the sample. Initial interviews were conducted with 15 companies, and basic information was collected on their BMI projects. Among the 15 companies, those included in the final sample had shifted their business logic from a product BM to a more service and solution oriented BM. A final criterion for selection was that the case should provide new insights into the phenomenon and allow good access to relevant information (Eisenhardt and Graebner, 2007). The final sample includes seven companies.

Firms included in case studies for papers II- IV were sampled purposefully. Paper II draws on three cases (two performed by one of the co-authors in the scope of another research project and one performed during this PhD project) to explain the process of BMI in relation to how firms formulate problems with their existing BMs and search for solutions. Sigglekow (2007) suggests studying ‘critical cases’ which are held up as good examples to initiate theoretical discussion of specific phenomena which are in their early stages. For the sampling, we set the requirements that the companies must be large, established firms that had been world leaders in their markets for several decades and had renewed the BM of one of their core businesses.

One way to manage BMI in established firms is to adopt a new BM alongside the established BM. Paper III examines how firms manage working with dual BMs by

explaining how the processes are organized in established firms. This paper draws on a study of two cases from construction and house-building industry. The traditional house-building industry follows a project-oriented BM centered on designing unique residential development projects that are developed in-house, and executed and adjusted by temporary sub-contractors onsite (Lessing and Brege, 2015). The first case in our study explains how Skanska, one of the leading construction companies in Sweden, developed and launched a new BM with the purpose of standardizing the construction of residential buildings. The second case, discusses a joint venture between IKEA and Skanska aimed at building residential buildings using a product-oriented BM that combines the successful core components of the BMs from IKEA and Skanska.

Paper IV is based on a longitudinal and comparative case study performed by one of the co-authors, of two ventures based in Berlin, Germany. The paper explores the process of developing new BMs in the context of entrepreneurial ventures. To select comparable cases, we focused on new ventures founded in the previous five years, in comparatively similar industries and geographies, which had developed comparatively similar value propositions.

3.3 Data collection and data analysis

As suggested by Voss et al. (2002) to improve data richness, data were collected from multiple sources. Data sources that have been used in different studies consist of interviews, site visits, workshops, company annual reports, internal documentations, articles in trade press, and email and informal conversations with informants involved in the case. In line with the exploratory nature of the research, we applied an abductive approach to data collection and analysis which is characterized by iterations between empirical findings and theoretical insights (Dubois and Gadde, 2002). In parallel with the data collection activity, empirical findings were compared and contrasted by applying multiple analytical lenses, derived from different theoretical domains. This resulted in different theoretical perspectives being applied in the appended papers, selected to address the objectives of the respective papers and the empirical material. In all case studies, data collection was followed by detailed case write-ups which constitutes the first step in organizing the data and preparing a chronology for subsequent analysis.

Data collection for Paper I was conducted during the first quarter of 2016 based on 21 semi-structured interviews with top and middle managers such as chief executive officers, project managers, innovation managers, sales and marketing managers, and business area managers. Interviews lasted an average of 1.5 hours and were recorded and transcribed. All interviews were semi-structured and focused on topics such as the firm's motives for initiating BMI, overall process and activities performed, nature of the interviewee's involvement, reflections on the challenges and opportunities, and other issues. Following each interview, the new knowledge gained was incorporated in the subsequent interviews by revising the interview protocol. During the analysis, my aim was to track how certain

events (e.g. antecedents, drivers, barriers, etc.) influenced the nature of the activities performed (concept creation, test, implementation, etc.) and the choices made (e.g. initiation, resource allocation, termination, etc.) during the BMI process. I also wanted to try to identify patterns of commonality in how the process unfolded in different contexts.

At the start of data collection for the first case study (Platinum) described in paper II, the objective was to understand the performance of BMI in established firms. However, our initial data collection and analysis indicated a long and resource consuming process in this case which redirected the focus on to the process of BMI and the underlying mechanisms that might explain the process . Accordingly, two more cases were sampled theoretically based on a replication logic (Eisenhardt, 1989). Primary data were collected through semi-structured interviews, informal and email conversations, innovation audits in two of the cases, workshops with managers and staff, and internal presentations.

A total of 21 in-depth interviews were conducted with informants at different hierarchical and functional levels including chief technology officer, chief operations officer, vice presidents, innovation managers, business directors, senior engineers, and sales personnel. Moreover, data from two innovation audits (for Platinum and Iridium) and workshops with managers which were conducted by two of the paper's co-authors and their colleagues were incorporated as additional input. Innovation audits, despite not creating thick descriptions, provide an overview of the overall business unit and innovation activities of the firms. Workshops were explicitly focused on problem formulation and solving activities as a part of progressing with BMs of the focal firms.

Data from different sources were compiled to create thick descriptions (Eisenhardt and Graebner, 2007). Emerging patterns and sequences of events were derived from the thick descriptions. 1st-order analysis of the data using informant-centric codes and terms (Gioia et al., 2013) was done by identifying BM problems that were addressed in the cases, their importance, and the firms' ability to solve them. This step was followed by 2nd-order analysis (i.e. using researcher-centric concepts and themes) where the BM canvas (Osterwalder and Pigneur, 2010) was used to characterize problems based on their relations to BM canvas elements, and to order the problems based on their emergence. Within case analyses led to identification of major BM problems based on behavioral changes in each case. Following a critical incident approach and using the problem-solving (e.g. Nickerson and Zenger, 2004) and search literatures (e.g. Gavetti and Levinthal, 2000) as our theoretical lenses, the patterns of emergence of major BM problems were compared through cross-case analyses.

Data for Paper III were collected from multiple sources including semi-structured interviews, internal handbooks and presentations, articles in trade press, etc. A total of 29 interviews were conducted, each lasting about 1-1.5 hours. To limit the possible bias involved in interview data we followed Eisenhardt's (1989) recommendation to use

highly knowledgeable informants with different perspectives on the process depending on their hierarchical levels and function (CEO, CTO, brand and concept manager, project leaders and project development managers, production managers, business manager, R&D director, and sales representatives). The questions posed during the interviews focused on the interviewees' roles and perspectives on the BMI process. Following each interview reflections were discussed and the interview guide was adapted based on missing information for application in future interviews. Moreover, to improve the internal validity of the research, in the interviews with informants from different functional and hierarchical levels, attempts were made to identify opposing views and contrasting reflections in order to incorporate these insights into our growing understanding of the phenomenon (Easterby-Smith et al., 2015; Eisenhardt, 1989). As far as possible, interviews were face-to-face but due to geographic distances, some were conducted over the phone. The majority of interviews were recorded and transcribed. Interviews were complemented by observations at three sales events, and informal conversations with the sales representatives and customers attending these events.

Data analysis started with the writing of case narratives based on interview transcripts which were reviewed in meetings with the other two researchers involved in the study. By drawing on existing BM conceptualizations within each case narrative, we highlighted the organizational relationship between the new and the primary BMs. The relations to the primary BM, and how the firm searched for, and evaluated the new BM was analyzed. This provided an overview of the original BM prior to initiation of the BMI and the new BMs by mapping the design and development of the BM components in chronological order (Langley, 1999). We then adopted an ambidexterity perspective on BMI (March, 1991; Markides, 2013) and highlighted separation and integration between the two BMs in relation to different domains and organizational structures. After analyzing each case individually, we identified differences and similarities between the cases.

Paper IV draws on data from 46 semi-structured interviews conducted by one of the co-authors between 2012-2015 with the founders and employees of the two sampled ventures. The interview protocol was based on the theoretical framework of the study, in relation to resources (Barney, 1991), BM (Johnson et al., 2008), and BM changes (McGrath et al., 1999; Morris et al., 2005). Each interview lasted around 90 minutes and all interviews were recorded and transcribed. We applied an analytical process of recursive cycling of case data (Eisenhardt and Graebner, 2007). Data from interview transcripts were compiled and complemented by archival data and observation notes. We derived emerging concepts and themes which we compared and discussed against the theoretical framework (Strauss and Corbin, 1990). Secondary data were used to compare the qualitative findings to avoid possible bias.

Table 6 summarizes the methodological choices and illustrates the research objective, unit of analysis, research design, sample and data sources related to each paper.

Table 6: Overview of the design of appended papers.

	Paper I	**Paper II**	**Paper III**	**Paper IV**
Research objective	Exploring the process of BMI in different set-ups	Explaining BMI processes using problems as a mechanism to guide how the process unfolds	Explaining how established firms organize parallel BMs	Exploring BM adaptation to understand how ventures organize their scarce resources to develop a viable BM.
Research design	Multiple case study	Multiple case study	Multiple case study	Multiple case study
Sample	5 MNCs 2 SMEs	3 MNCs	2 MNCs 1 joint venture	2 Ventures
Type of change	Generating more value within the existing BM or designing a new BM	BM reconfiguration by making products more intelligent or accompanying services with products	Adding a new BM parallel to an existing one	BM development and growth in entrepreneurial firms
Data sources	21 semi-structured interviews, 5 site visits in 2016	21[10] semi-structured interviews, innovation audit 10 site visits between 2002-2016	29 semi-structured interviews 3 sales-event visits between 2013-2017	46[11] semi-structured interviews between 2012-2015
	Other sources: Annual reports, Internal presentation material, industry reports, email conversations, informal discussions, Trade press articles	Other sources: Internal documentation and presentation material, Internal workshops, articles from trade press, different versions of business plans and annual reports.	Other sources: Internal documentations, handbooks, articles in trade press, annual reports, informal discussions with project members and customers	Other sources: Internal documentations, handbooks, articles in trade press, informal discussions

[10] 16 of the interviews were conducted by the co-authors of the paper.
[11] Interviews were conducted by one of the co-authors of the paper.

4 Summary of the appended papers

This chapter provides summaries of the appended papers. Table 7 summarizes the key findings from each paper.

4.1 Paper I

Title: In search of a route map: Exploring business model innovation processes in established firms

Since the millennium, discussion of BMs as important vehicles and sources of innovation has increased. This paper explores the process of BMI in seven established firms from various industries. The findings provide evidence that BMI can follow a purposeful, or an unintentional and emerging process.

The paper shows that purposeful BMI occurs only in firms perceiving threats such as industry disruptions or severe economic crisis. This process is characterized by greater uncertainty, and simultaneous design and implementation of several new BM elements that can be better protected if organized in a separate business. The analyses reveal also that under conditions of perceived opportunities such as realizing a customer need, or differentiating offers from key competitors, the process unfolded as rather unplanned and emerging. When embarking on the emerging process of BMI, the intention of managers was not necessarily to renew the firm's BM from the beginning, but rather to work on the design and development of a new value proposition. However, the complementarities among BM elements directed their attention to the changes required in other BM elements which resulted ultimately in a new BM as the process outcome.

This main contribution of this paper is to BMI research; it sheds light on the fact that new BMs may emerge as an outcome of other innovation activities that are organized either top-down or bottom-up in the line organization, rather than in the form of a purposeful cognitive or experiential process as conceptualized in the previous literature.

4.2 Paper II

Title: Business model innovation processes: Looking forward and looking backward

This paper analyzes BMI processes in established firms. We draw on qualitative data from three firms prominent in the manufacturing industry to demonstrate how the processes of BMI unfold. The paper shows that formulating and solving major problems guide the processes of BMI in established firms. The paper demonstrates two determinants of major problem solution that result in BMIs.

We show that there are three dimensions of search guiding the BMI process. First, whether search is forward looking or backward looking. Second, whether evaluation of alternatives is made offline or online. Third, whether problems are not at all, nearly, or completely decomposable. BMI processes therefore, should be understood as consisting of shifts between forward-looking and backward-looking search as well as offline and online evaluations based on formulating and solving major BM problems.

This paper contributes to the BMI literature by focusing on the problem as the unit of analysis, thereby introducing a mechanism to explain how BMI processes unfold in terms of shifts between cognitive and experiential search.

4.3 Paper III

Title: Organizing for parallel business models in established firms

Prior BMI research pays little attention to the various choices and decisions of organizing for parallel BMs. The paper explores how established firms organize for new BMs to be run in parallel with their primary BM. Empirically we study two cases dealing with industrialization of construction and how the firms, Skanska and IKEA developed new BMs and organized the parallel set-up.

First case deals with how Skanska developed and launched a new BM with the purpose to improve value capture from residential development by decreasing total costs of production through using standardized platforms in production system for the construction of residential buildings. The second case discusses a collaboration between IKEA and Skanska with the purpose to build residential buildings trough a BM that fuses the traditional and core components of the BMs of the two parent companies.

The cases show that neither full separation or full integration is a panacea for how to organize a new BM running in parallel with the primary. We found that the firms were unable to determine ex-ante what to organizationally integrate or separate prior to implementation of the new BM. That is, we suggest that firms are unlikely to know how to organize for parallel BMs before it will know how the new BM will operate. Therefore,

we argue that the issue of how to organize parallel BMs is a secondary question to the question to how to run the new activities of the new BM.

4.4 Paper IV

Title: Adapt and strive — How ventures under resource constraints create value through business model adaptations

This paper investigates how new ventures organize their BMs in order to utilize their available resources. It employs the BM as the unit of analysis to investigate the role and nature of BM adaptation as a mechanism to cope with resource constraints. By drawing on a case study of two ventures with different resources, the paper shows how those ventures used BM adaptation under resource constraints in order to create comparable offerings. The two ventures started off with similar value propositions. We found that once they started adapting their BM, the available resources affected their BMs. Instead of trying to accumulate more and more resources which would then require management, the ventures acknowledged their stocks and flows of resources and adapted their BM components.

BM adaptation involves a process of continuous search, selection, and improvements to value creation, value proposition, and value capture, based on the surrounding environment. For the two new ventures included in this study, early BM adaptations were related to (1) market – geography and customer, (2) strategy–marketing, sales, and growth, (3) profit– profit formula and cost structure, and (4) structures, processes, and capabilities.

The main contribution of the paper to the BM literature is that it demonstrates the way that the adaptation process is conditioned by the ventures' stocks and flows of resources. Bringing a resource perspective into the process of BM adaptation has some practical implications for new ventures developing and adapting their BMs to co-develop their offering strategically using their available resources in a way that matches their adaptations. While emphasis has been put on the importance of pivotal product-market matching during the BM design and development process, our study highlights the bi-directional relationship and learning inherent in the interaction between flows of resources and adaptations to the value proposition. We argue that resources need to be assembled and adapted with care in order to create a functioning and scalable BM, and as the new venture learns to adapt its resources, it learns also what additional resources are needed for the adaptations to their work.

Table 7: Summary of the key findings of the four appended papers.

Paper I	**Paper II**	**Paper III**	**Paper IV**
BMIs follows two patterns or purposeful and unintentional. The nature of the BMI process is related to the origin of the process in terms of perceived opportunities or threats. While perceiving threats, the BMIPs unfolded as a purposeful process characterized by greater uncertainty and simultaneous design of several BM elements. While perceiving opportunities, BMIP emerged as a rather unintentional process where the original focus was on improving value proposition often for existing key customer segments. The process was followed by one at a time, additional adaptations in other BM elements based on identified problems due to the existing complementarities among the elements. Purposeful BMIs were initiated but not controlled by the CEOs. Unintentional BMIs unfolded either as top-down processes guided by top managers or as skunkworks by marketing and sales departments, slowly finding their paths to the top.	Formulating and solving major BM problems guides the process of BMI in established firms. Major problem identified were related to poor product-market fit, poor revenue model, and lack of customer's trust. While solving major BM problems, three dimensions of search for solution were identified: 1) Whether search is forward-looking or backward-looking, 2) Whether evaluation of alternatives is made online or offline, 3) Whether problems are non-, nearly, or completely decomposable. The BMIP can be characterized by shifts between backward-looking and forward-looking search, as well as offline and online evaluations. Managers should be prepared to support such shifts several times along the process.	The decision regarding whether to separate or integrate parallel BMs is difficult to be made *ex ante* as it is guided by the complex and emerging process of search and evaluation. What to separate is context-dependent. The complex and emerging nature of BM configuration hinders successful *ex ante* decisions about whether and how the parallel BMs should be separated or integrated. When the two models and domain activities are similar and the BMs are complementary, the firm can benefit from integration and building synergies among the two models. Whether to separate or integrate the two BMs is the secondary question to ask. Prior to addressing this question, the firm needs to ensure that the new BM is viable.	Early BM adaptations were related to (1) market — geography and customer, (2) strategy — marketing, sales, and growth, (3) profit — profit formula and cost structure, and (4) structures, processes, and capabilities. Adaptations were related to different elements of the BM and were triggered by changes in the stock and flow of resources. Iterative product-market fit is not enough to explain the nature of BM adaptations made by new ventures. There is a bi-directional relationship between resources and BM adaptations. Available resources determine what type of BM adaptations are required for the venture to create and capture value and the learning from each adaptation can be used to plan what resources are necessary to acquire.

5 Discussion

This chapter discusses the main findings from the four papers appended to this thesis, and links them to the thesis RQs. The purpose of this thesis is to explore BMI processes in multiple industrial and organizational contexts. In the following I discuss the two overarching RQs formulated in the introduction of the thesis. To investigate the RQs, I draw on empirical findings from the four appended papers and outline their implications for research and practice, followed by a number of suggestions for future research.

5.1 Why and when do companies innovate their BMs?

The findings from the four papers indicate multiple antecedents to the BMIs. Following a competitor move (Volvo), new laws and legislations (Scania), global recession and increase in construction costs (BoKlok), addressing customer problems (SKF), product commoditization (Holmbergs safety systems, Iridium), responding to technological disruption (Bonnier), bringing a new product or technology to the existing market (Starke Arvid, Titanium), looking to leverage underutilized resources or capabilities (Husqvarna, Platinum, Xchange), and acquiring new resources (Styla, Blogfoster) were the major forces leading to BMIs in the studied firms.

Some of these antecedents were perceived by firms as opportunities for growth and gaining more profit (e.g. differentiation, addressing customer problems) while others became apparent as 'change or perish' perceptions of threat (e.g. financial crisis, digitalization and industry disruption). This is in line with previous literature differentiating the origins of BMI along the dimensions of perceived opportunity or threat (Bucherer et al., 2012; Saebi et al., 2017), as well as presence of external or internal stimuli for innovation (Giesen et al., 2010). The three antecedents to BMI observed in this thesis include: external threat, internal opportunity, and external opportunity. While my observations do not indicate perception of internal threats by any of the companies studied, such antecedents have been identified previously, for example when resources become too costly, or become unnecessary over time, and enforce a change to the BM

(Bucherer et al., 212). The majority of the identified antecedents were perceived by managers as opportunities for growth and profitability by managers. Figure 3 puts the aforementioned antecedents in perspective.

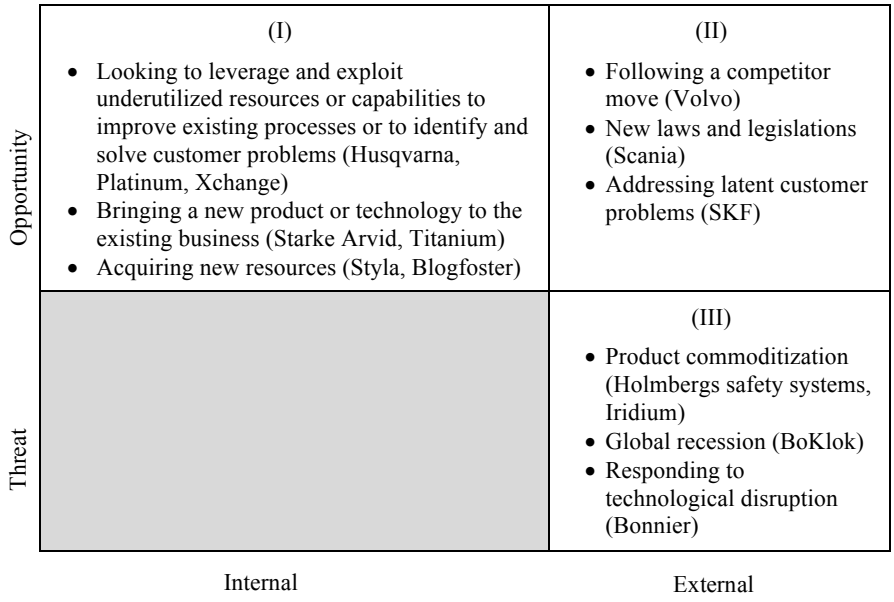

Figure 3: Antecedents to BMI (adapted from Bucherer et al., 2012).

While identification of different antecedents along the dimensions above does not add fundamentally to our previous understanding of premises of BMI (Bucherer et al., 2012), it constitutes a first step in observing whether different antecedents give rise to different types of activities and events along the BMI process. In section 5.2 I discuss firms' different approaches to BMI when perceiving threat versus. opportunity.

5.2 How does the process of BMI unfold?

Compiling the findings from the four papers suggest a distinction between two approaches to BMI in relation to the antecedents to BMI and the nature of the changes made to the BM. The first approach involves the firm deliberately designing a new BM, and the second involves the firm reconfiguring its existing BM to increase profitability and growth.

5.2.1 Purposeful BMI

The process of purposefully designing a new BM was adopted mostly by firms experiencing an external threat (see box III in Figure 3). Once the firm was dealing with crisis situations arose by technological disruption (Bonnier) or sever downturn in revenues due to product commoditization (Holmbergs Safety Systems) it was decided upfront that the firm should seek alternative BMs. The BM was recognized as the source of innovation by managers and they were usually putting together a small taskforce to perform an intensive market study to recognize attractive markets, to analyze where companies' competitive assets and capabilities were positioned, and to conceptualization

of an alternative BM which could save their business. Therefore, such processes usually began with an analysis of the existing BM and realization that a new BM was required to be able to respond to perceived threats. This was followed by extensive market studies, and design of a new BM, where multiple BM components were conceptualized simultaneously and new capabilities and resources were acquired. The new BM concept was then put into evaluation in the market and several adjustments were made to different BM components until the results of the tests were satisficing. The new BM was then operationalized.

The above sequence of events highlights the supremacy of forward-looking, cognitive search (Gavetti and Levinthal, 2000) in the early stages of the process for conceiving the new BM prior to its operationalization. Cognitive search is forward-looking and theory-guided, meaning that alternatives are first conceptualized and evaluated by use of analytical predictions, representations, and abstractions. Cognitive research employs offline evaluation where causal implications of different alternatives are carefully studied before putting them into action.

Based on the results of analytical evaluations and speculations, the most promising BM concept was put into test and adaptations within the frames of the concept defined (Berends et al. 2016; Osterwalder and Pigneur, 2010). This indicates that required adaptations were made by using feedback from experiential learning. The informants motivated the choice of first conceptualizing and later experimenting with the new BM in relation to the risks and uncertainties involved in configuring multiple BM elements and their interrelations simultaneously.

Figure 4 illustrates the flow of events in purposeful BMI processes. While the figure depicts the process as quite ‘planned’ and structured, starting with dominancy of cognitive search, I would like to emphasize that my observations highlighted that there might be multiple iterations within the process. Paper I and III show that new BMs were not conceptualized ‘fully-formed’ in the first try and had to go back to the cognitive phase following the first trial of the new BM on the market. Moreover, Paper III showed that when it comes to growth and scaling up the new BM in multiple markets, the firm ran into a number of problems with exploiting the BM (e.g. due to lack of capabilities and competences in local markets to create the value intended through the new BM or due to dissimilar customer preferences and legal codes). To solve those problems the firm had to go back to the cognitive phase to re-conceptualize and create some alterations in the BM before being able to operationalize it in the desired markets.

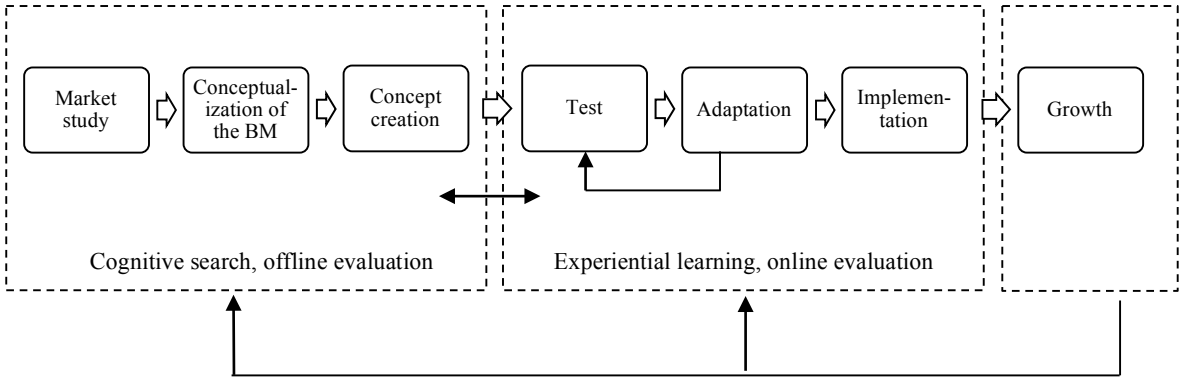

Figure 4: Shifts between modes of search along the process of purposeful BMI.

5.2.2. *Unintentional BMI*

The second approach to BMI consists of the firm reconfiguring its existing BM to improve profitability and growth. One observation was that these processes were often not classified by the companies as "business model innovation" – at least not initially. Instead, early activities were more related more to product, process, and technological innovations as firms started by asking how they could improve their customer offers to improve their market position, or how they could improve their existing processes and use of resources and capabilities to generate more profit. It took most of the companies some time to understand that improving their products or processes required alterations to their existing BMs or the development of new ones.

These processes were characterized by ad hoc alterations to different BM components each triggered by the perception of a major BM problem. Papers I and II show that when responding to opportunities for designing a new value proposition or improving existing offerings and processes (boxes I and II in figure 3), firms encountered major problems with their existing BMs, which was in operation, which needed to be resolved in order to create and capture the intended value. 'Problems' have been defined as a deviation between some perceived existing situation and some perceived desire or possible situation (Björkdahl and Holmén, 2016; Pounds, 1969).

Perceiving problems with BM when altering the offering or processes supporting their creation and delivery can be explained in relation to existing interlinkages between different BM elements. Paper I, II, and IV show that changing one BM element or component (e.g. new customer segment or new offering) may create problems in other elements (e.g. not matching revenue model, lack of required partnerships, not supporting organizational structure, etc.), hence leading to additional alterations due to complementarities among the BM elements at the system level.

Paper II identifies a sequence of three major problems faced by firms related to their existing BMs: poor product-market fit, infeasible cost structure or revenue model, and

lack of customer trust in the new value proposition. The BMI was an unintended consequence of encountering these problems, in that the firms tackled the problems sequentially or in parallel by searching for new BM solutions.

Paper IV further shows that in the context of startups that were growing their newly operationalized BMs, changes on the sock and flow of resources triggered perception of problems and prospects that guided adaptations to the BM (e.g. in relation to target customer segments, profit model, and existing structures and processes).

Identification and formulation of each BM problem guided a directional search for solutions to the problem encountered. What distinguishes 'major' BM problems from other BM problems in relation to triggering BMI is that those problems could not be solved by drawing on existing activities, capabilities, and experiences (i.e. experiential learning). Hence the firm had to shift to forward-looking, cognitive search to generate new insights into how the problem can be solved, by generating a variety of solutions. Problem attributes in relation to complexity and structure shape the ease or difficulty of solution search (Macher and Boerner, 2012), and determine the strategy related to where and how to conduct the search for solutions (Nickerson and Zenger, 2004). The first types of solutions are selected through low cost offline evaluation, by linking each solution to its anticipated outcome. The selected solutions must be tested in market (i.e. online evaluation). Figure 5 shows that the process of BMI in its second form consists of a series of cycles of major problem formulation, search for solution and selection of solution.

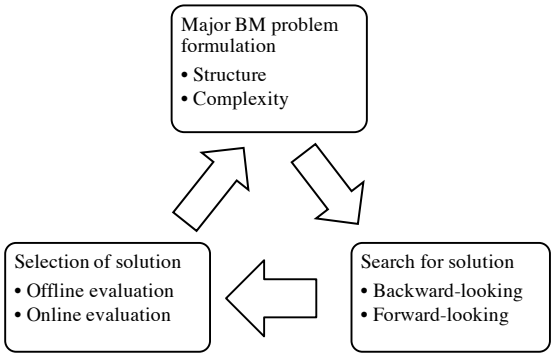

Figure 5: Iterative cycles of problem formulation-search-selection during the process of existing BM reconfiguration.

5.3 An extended view of the processes of BMI

The findings presented in this thesis extend our theoretical understanding of the processes of BMI. The previous BMI literature either emphasizes the dominance of the cognitive domain in BMI (e.g. Aspara et al., 2011; Funari, 2015), or describes the BMI process as emerging primarily from the domains of action and experimentation (e.g. McGrath, 2010; Sosna et al., 2010). Berends et al. (2016) recently identified two patterns of shift between

cognitive search and experiential learning during the BMI. The findings in this thesis corroborate with Berends et al. (2016) in that BMI processes cannot be captured with a single mechanism. All studied processes involved iterative patterns of cognitive search and experiential learning. Paper I and III show that starting with cognitively searching a new BM addressed more BM components and their interactions simultaneously, and the new BM was put into operation later and more cautiously. In contrast, when fixing major BM problems, directional search had a more limited decision parameters as it was focused on the particular BM components that were related to the problem perceived. As soon as a solution was found it was put into action. Therefore, such processes involved a sequence of changes applied to BM components, each change involving only a few components.

Prior studies of BMI processes have mainly focused on modes of learning as an explanatory mechanism for how BMI processes unfold (Berends et al., 2016; Sosna et al., 2010). By reflecting on antecedents, problem formulation and solving, and approach to search as interrelated mechanisms that guided the processes of BMI, this thesis also extends our understanding of mechanisms that explain why and how firms approach BMI so differently. Highlighting the differences in how the BMI processes unfold raises a note that 'one size does not fit all' when it comes to the processes of BMI. Instead to understand how to work with and manage BMI, it is important to reflect on how the identified mechanisms guide the process.

Moreover, the findings extend previous assumptions about when the process of BMI starts. It is important to stress that the process of BMI does not always start when an idea for a new BM has been identified– an event that is usually highlighted in prior literature as 'ideation'. Nor it always begins with a deliberate and strategic decision to explore new avenues for business. As Paper I has shown, in many cases BMIs started as skunkworks[12] by a group of curious people (from the same or different functions) that had identified a problem or an opportunity with their business-as-usual and were eager to work with that. This means that the beginning of the process of BMI may go back to those acts of insight when the managers find opportunities for improving their offerings and processes and realize the conflicts of pursuing them within their existing BM. The findings further raise a number of implications for research on and practice of BMI which are discussed in the following sections.

[12] Skunkworks are defined as "enriched environment that is intended to help a small group of individuals design a new idea by escaping routine organizational procedures" (Rogers, 2003; p. 109).

6 Implications and future research

This section provides a number of implications for research and practice and suggests potential paths for future research.

6.1 Implications for research

Differentiating between the two ways that BMI processes unfold has a number of implications for research. First, it indicates that BMIs are not always deliberate but rather may emerge from and co-evolve with other innovation activities under existing BMs. The prior BM literature characterizes BMI mainly as a deliberate process (Cortimiglia et al., 2016; Frankenberger et al., 2013; Mitchell and Coles, 2003). As an exception, in a recent study of average market players Laudien and Däxböck (2016) show that BMIs by average market players do not usually involve a top down process but tend to be the result of an unintended learning process. In their sample of 10 firms, only two innovated their BMs deliberately. This thesis argues that conceptualizing BMI as an unintended process is not limited to the average market players. The firms studied many of which experienced BMI as an unintended consequence of other innovation activities are incumbent firms that had been world leaders in their markets for several decades. The finding that BMI can emerge unintentionally also questions the applicability of normative process models for BMI adapted from the product innovation literature which assumes the process of BMI starts with an idea about a new BM (ideation) (Frankenberger et al., 2013). By adopting an event-driven perspective to the BMI process, this thesis has shown that the beginning of the BMI process can be traced back to long before the idea for a new BM emerges, when the firm identifies a customer or internal problem.

Second, the thesis confirmed the presence of both cognitive search and experiential learning during the processes of BMI. While the deliberate new BM design demonstrates dominance of cognitive search during the early stages of the process and experiential

learning during the later stages, in the case of unintentional BMI processes, several shifts may be required between the two modes of search depending on the nature and number of major BM problems identified.

Third, the thesis introduced the 'problem' as an alternative mechanism explaining the BMI process. Using problem as a unit of analysis provides researchers with a comprehensive construct for conceptualizing BM changes. Problem also explains why managers choose a certain search approach over another in certain situations. After identifying a problem, managers determine how to organize the search for the type of knowledge (existing vs. new) required to resolve the problem (Nickerson and Zenger, 2004). The attributes of the problem in relation to its complexity and structure shape the ease or difficulty of the solution search (Macher and Boerner, 2012), and determine the strategy related to where and how to conduct the search for solutions (Nickerson and Zenger, 2004). Therefore, problem framing or problem formulation is central to creating assumptions and expectations related to where a solution can be found, and for providing guidance for how the firm should approach search (Gavetti and Levinthal, 2000).

6.2 Implications for practice

The findings presented in this thesis have a number of implications for firm's approach to innovating their BM. Those implications that are of particular importance are: (1) supporting skunkworks during early phases of BMI, (2) early BM discussions to support other innovation activities, and (3) creating flexible structures for organizing parallel BMs.

6.2.1 Supporting skunkworks during early phases of BMI

BMI has become topical in strategy debate, and discussed mainly in relation to the upper echelons in the organizational structure. This is justified by the fact that in traditional organizational structures innovation is treated by executives as a more top-down approach. The findings from this thesis research provide evidence that at times, ideas for BMI come from middle managers who are closer to the customer and have a better understanding of market fluctuations and changes to customers' needs. In some cases, BMIs are the outcome of skunkworks and incremental activities within the scope of the existing BM, initiated by managers with no decision-making authority related to innovating the corporate BM.

In acknowledging that BMI may be initiated by a group of curiosity driven pioneers who are stimulated by uncertainty and motivated by digging deeper into their everyday tasks, the aim should be to identify the most competent people in the organization who have the intellectual capability required to conceptualize alternative BMs. The problem lies in creating and experimenting with new BMs. In established firms one of the problems related to implementing BMIs concerns how to convince the rest of the organization (including top management), and how to conquer an organizational culture that might be

a century old – as in some of the cases examined in this thesis. One pattern is that top management is trapped in cognitive barriers created by a dominant logic which does not allow participation in the BMI conceptualization. Paradoxically, those individuals not constrained by such cognitive barriers often do not have the power to make decisions. Under these circumstances, ideas can vanish or get lost in a complex hierarchical and decentralized organizational structure.

Based on my findings on unintentional BMIs, I would suggest that top managers in established organizations should act as facilitators and communicators of BMI but not its controllers. Top management can translate skunkworks into cross-functional task forces that explore new directions, allowing the pioneers to get some distance from their everyday jobs and dedicate their time to working with the new BM. Top management can facilitate communication between the task force and the rest of the organization based on receipt of regular reports whose content is passed on to the line organization so that preparations can be made for possible future changes.

6.2.2 Early BM discussions to support other innovation activities

The second implication deals with supporting earlier BM problem identification and solving when pursuing other innovation activities, which is very importance in industries experiencing rapid transformations.

Instead of starting with developing new BMs by trial and error, an important job of managers would be to support valuable problem finding and solving. Problem formulation in groups or teams differs from individual problem formulation and it is unlikely that problems will be sufficiently formulated and analyzed by a single individual (Björkdahl and Holmén, 2016). For tackling complex and multifaceted issues such as innovation and its consequences on core processes and the BM of the firm, firms require input from a group of individuals with heterogeneous backgrounds. Therefore, one suggestion for top management is to put together a competent peer-review team involving representatives from different domains such as R&D, sales and marketing, IT, and strategy to early on analyze new innovation activities from BM perspective, and to evaluate whether the existing BM is suitable for supporting those activities. If not, the group can formulate major foreseeable problems with the existing BM in supporting the innovation. The peer-review team should prioritize problems in relation to how ‘valuable’ they are. The value of a problem depends on the value in the possible solutions and the costs of discovering a particularly valuable solution (Nickerson and Zenger, 2004).

6.2.3 Creating flexible structures for organizing parallel BMs

BMI involves high risks as it may change the entire architectural configuration of a business. A critical managerial challenge related to the management of BMs is represented by the conflicts arising from multiple BMs (Markides and Oyon, 2010). While strategy experts traditionally proposed keeping the two BMs separated in two

different units (cf. Christensen, 1997) recently scholars have argued that firms must create synergies between different BMs, hence advocating for more integration between the BMs.

This thesis provided new insights for managers for organizing parallel BMs. As shown in Paper III it is difficult or even impossible for managers to know in advance how integrated or separated parallel BMs should be to run successfully. The decision is guided by the search and evaluation process and an analysis of how the two BMs are related to one another (in customers they are targeting, in resources and physical assets they require, in the structure of domain activities they depend on, and in their profit models) which is too complex to be understood before a viable BM is fully configured. Therefore, when developing parallel BMs managers should avoid formal decisions during early phases that would restrict possible detours along the process when more knowledge is obtained on how the new BM operates. Firms may need to try different organizational tactics for managing parallel BMs along the process until the new BM is fully configured.

6.3 Directions for future research

This thesis research investigated why, when, and how firms innovate their BMs by applying a process view of the phenomenon of BMI. Future research could take several directions, some of which are particularly important.

First, this thesis shows that BMI can be manifested in both the new BM design and the existing BM reconfiguration. Considering how these two process types are related to distinct activities and imply important differences, it would be useful for future research to treat the two as separate phenomena. In studying new BM design, it might be useful to focus on how opportunities for a new BM are recognized, how the design of the new BM content unfolds in relation to both internal organizational activities and arrangements, and in terms of exchanges with external stakeholders, and how the firm iterates between the two modes of search when designing the new BM. When studying the phenomenon of an existing BM reconfiguration, the focus could be on how problems with the existing BM are identified, how the firm works actively toward finding solutions to those problems, and how the firm overcomes the cognitive and structural barriers to change.

Second, future research can explore how newly developed BMs are replicated in established firms that pursuit globalization. Prior to the 1990s, once a company had found a BM that worked, it applied strategies for replicating that BM in other markets and taking benefit of reducing long-term costs (Mitchel and Coles, 2003). But when innovating the BM, this thesis has shown, the same strategy involves high risks as new BMs do not emerge ‘fully formed’ and they go through iterative processes of fine-tuning and adaptation. My observations of the case studies of MNCs show that in many occasions MNCs replicated a new BM that was only evaluated locally, in multiple markets around the world, and that this led to unsatisfactory performance and the closing down of

operations related to the new BM. At times this was due to internal problems such as lack of capabilities and competences in different markets, and at other times it was due to external problems such as differences in laws and legislation, or different customer needs. Future research could examine how firms 'replicate' BMI and how the new BM should be adapted when entering new markets.

Third, future research could explore the dynamics of strategy and BM changes by applying a process methodology. This thesis proposes a bi-directional relationship between strategy and BM change. Paper I showed that some external triggers such technological disruptions were followed by strategy changes that guided subsequent changes to the BM. Casadesus-Masanell and Ricart (2010) characterize strategy as the choice of the firm's BM to compete in the marketplace. This definition implies that the BM must match the firm's overall strategy, and a shift in the company strategy requires a subsequent change in the firm's BM. An interesting finding in Paper I is that successful BMI can trigger subsequent strategy changes (e.g. the cases of Volvo and Husqvarna). In this way, strategy is a reflection of the firm's realized new BM, not vice versa as Casadesus-Masanell and Ricart (2010) contend. Further exploration of the temporal sequence of strategy changes and the BM could contribute to ongoing debate on the relation between strategy and the BM.

7 Conclusions

The purpose of this thesis was to explore BMI processes in multiple industrial and organizational contexts. The contributions of this thesis are threefold. First it contributes to the emerging conceptualizations of BMI processes by shedding light on unintentional BMIs and explaining how BMI processes unfold in spaces of 'new BM design', which often is approached purposefully, and 'existing BM transformation', where changes originate from the existing BM to support other innovation activities. Both processes are characterized by patterns of cognitive search and experiential learning.

Second, the thesis contributes to the BMI literature by introducing *problem* as a new unit of analysis for understanding existing BM transformations in established firms that take off from an existing BM. Focusing on problem provides a managerially relevant and practical unit of analysis around which decisions are made about whether to draw on already existing solutions or to generate new knowledge by searching for alternative solutions. By using problem as the construct guiding the BMI governance the thesis extends recent findings on BMIs as characterized by both cognitive search and experiential learning by explaining why and how the process shifts from one mode of learning to another.

Third, the thesis contributes to the growing debate over how to organize parallel by showing that if two parallel BMs conflict some level of organizational or domain separation is required. The configurational nature of the BM, makes it difficult to decode ex ante about what to integrate or separate between the two BMs since they are not designed fully-formed but evolve through an iterative process of search and evaluation. The organizational structure is itself a part of the BM which has to be configured over time. Therefore, before addressing the questions of whether and what to integrate or separate between the parallel BMs, firms do need to ensure that their new BM is viable.

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